A STUDY OF COMPUTER PHOBIA AMONG SCHOOL TEACHERS TEACHING IN SENIOR SECONDARY SCHOOLS IN RELATION TO CERTAIN SELECTED VARIABLES

SYNOPSIS OF THE THESIS

Submitted by

Neelam Kumari

Registration No.: **17RSEPHE001**

Under supervision of

Dr. PROMILA DEVI

In Partial Fulfillment of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

SCHOOL OF EDUCATION
ABHILASHI UNIVERSITY
CHAIL CHOWK, MANDI (H.P.) – 175028

NOVEMBER, 2017

~~A STUDY OF~~ COMPUTER PHOBIA AMONG SCHOOL TEACHERS TEACHING IN SENIOR SECONDARY SCHOOLS IN RELATION TO CERTAIN SELECTED VARIABLES

Computer Phobia Among Senior Secondary School Teachers As Related to Certain Socio-Personal and Academic Variables.

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NOVEMBER 2017

DECLARATION

I hereby declare that the dissertation synopsis entitled **"COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS AS RELATED TO CERTAIN SOCIO-PERSONAL AND ACADEMIC VARIABLES"** to be submitted for the partial fulfillment of the Degree of Doctor of Philosophy is my original work and the dissertation has not formed the basis for the award of any degree, diploma, associateship or fellowship of similar other titles. It has not been submitted to any other University or Institution for the award of any degree or diploma.

Place:

Date:

Signature of the Scholar

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Dr. Promila

CERTIFICATE

This is to certify that the thesis titled "**COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS AS RELATED TO CERTAIN SOCIO-PERSONAL AND ACADEMIC VARIABLES**" is an original piece of work done by Neelam Kumari under my supervision for the degree of Doctor of Philosophy, in Abhilashi University Chail Chowk Mandi H.P. I also certify that this work has not been submitted to any other University for a Ph.D. degree.

Place:

Date:

Signature of the Supervisor

Name of the Supervisor

Dr. Pramila

Dedicated

To

“Mata Sudiksha Ji”

and

my Family

PREFACE

Words often fail to express one's inner feelings of indebtedness to one's benefactors. The same difficulty haunts the investigator in penning down the deep sense of gratitude. She owes to her revered and kind guide and a number of other persons who assisted her.

First and foremost, praises and thanks to the "Mata Sudiksha Ji" the Almighty, for the showers of blessings throughout my research work to complete it successfully.

'Drops of ink make millions think' but to try to think on any positive and constructive lines, we need an enlightened guidance of our teachers. It is such guidance that I received from my worthy and respected guide Dr. Promila, Professor and Dean Faculty of Education, Basic Sciences & Humanities, Abhilashi University Chail Chowk, Mandi H.P. Her dedication and keen interest above all her overwhelming attitude to help her students had been solely and mainly responsible for completing my work. Thank you so much Mam.

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All names cannot be mentioned, but no one is forgotten. By words, I remember all the persons who helped me to reach the end of this research undertaking.

The Chapterization Scheme of the Thesis is as follows:

First Chapter is Introductory which deals with aim and objectives of education, concept of computer phobia, causes of computer phobia and computer technology in teaching and learning. Significance of the study, study objectives, operational definition of key terms used and delimitation are also the part of Introductory Chapter.

The Review of Previous Research Studies has been mentioned in detail in the Second Chapter along with hypothesis formulated in the present investigation.

Third Chapter is devoted to Methodology which encompasses research method used and research approach followed, variables of the study, sampling, research tools developed, research design, data collection, scoring procedure followed, organization and tabulation of data and statistical techniques used for analyzing and interpreting the data.

Fourth Chapter is Analysis and Interpretation of Data in which the data have been presented in tabular form and the findings have been discussed. The analysis of data has been presented objective-wise in this Chapter.

Fifth Chapter is comprised of Conclusions, Educational Implications and Suggestions for Further Research.

The Last and Final Chapter of the Thesis is devoted to Summary.

Date: ***(Neelam Kumari)***

CONTENTS

CERTIFICATE	
DECLARATION	
PREFACE	
CONTENTS	
LIST OF TABLES	
LIST OF FIGURES	
ACRONYMS	

CHAPTER	TITLE	PAGE (S)
I	**INTRODUCTION**	**1-26**
1.1	Concept of Computer Phobia	3-6
1.2	Causes of Computer Phobia	6-7
1.3	The Symptoms of Computer Phobia	7
1.4	Teachers and Computer Phobia	8-9
1.5	Computer Technology in Teaching and Learning	9-11
1.6	Information Technology (IT) in Education	11-14
1.7	Utility of Information Technology (IT) for Teachers	14-15
1.8	Need of Information Technology for Teaching-Learning Process	16-18
1.9	Difference between Concept of IT, ICT and IIT	18-19
1.10	Benefits of Information and Communication Technology (ICT)	19-22
1.11	Significance of the Study	22-24
1.12	Statement of the Problem	24
1.13	Objectives of the Study	24-25

CHAPTER	TITLE	PAGE (S)
1.14	Delimitation of the Study	26
1.15	Operational Definition of the Terms Used	26
II	**REVIEW OF RELATED LITERATURE**	**27-59**
2.1	Purpose of Review of Literature	28-58
2.2	Hypothesis of the Study	58-59
III	**METHOD AND PROCEDURE**	**60-73**
3.1	Research Method Used	61
3.2	Research Approach Followed	61-62
3.3	Variables of the Study	62-63
3.4	Population and Sampling	63-66
3.5	Research Tool Used	67-71
3.5.1	Computer Phobia Scale by S. Rajasekar and P. Vaiyapuri Raja (2018)	67-70
3.5.2	Questionnaire for Senior Secondary School Teachers	70-71
3.6	Research Design	71
3.7	Data Collection	72
3. 8	Scoring Procedure	72
3.9	Analysis Of Data	73
IV	**ANALYSIS AND INTERPRETATION OF DATA**	**74-107**
4.1	Level of Computer Phobia among Senior Secondary School Teachers	75-77
4.2	Gender-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia and Components of Computer Phobia	78-82
4.2 (i)	Gender-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure	79

CHAPTER	TITLE	PAGE (S)
4.2 (ii)	Gender-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity	80
4.2 (iii)	Gender-Wise Difference among Senior Secondary School Teachers in terms of Convenience	81
4.2 (iv)	Gender-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia	82
4.3	Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Components of Computer Phobia and Overall Computer Phobia	83-87
4.3 (i)	Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure	84
4.3 (ii)	Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity	85
4.3 (iii)	Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Convenience	86
4.3 (iv)	Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia	87
4.4	Stream-Wise Difference among Senior Secondary School Teachers in terms of Components of Computer Phobia and Overall Computer Phobia	88-92
4.4 (i)	Stream-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure	89

CHAPTER	TITLE	PAGE (S)
4.4 (ii)	Stream-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity	90
4.4 (iii)	Stream-Wise Difference among Senior Secondary School Teachers in terms of Convenience	91
4.4 (iv)	Stream-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia	92
4.5	Locality-Wise Difference among Senior Secondary School Teachers in terms of Components of Computer Phobia and Overall Computer Phobia	93-96
4.5 (i)	Locality-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure	94
4.5 (ii)	Locality-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity	95
4.5 (iii)	Locality-Wise Difference among Senior Secondary School Teachers in terms of Convenience	96
4.5 (iv)	Locality-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia	97
4.6	School-Wise Difference among Senior Secondary School Teachers in terms of Components of Computer Phobia and Overall Computer Phobia	98-102
4.6 (i)	School-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure	99

CHAPTER	TITLE	PAGE (S)
4.6 (ii)	School-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity	100
4.6 (iii)	School-Wise Difference among Senior Secondary School Teachers in terms of Convenience	101
4.6 (iv)	School-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia	102
4.7	Views of Senior Secondary School Teachers about Computer Phobia	103-104
4.8	Reasons/Causes behind Computer Phobia among Senior Secondary School Teachers	105-106
4.9	Suggestions to reduce Computer Phobia among Senior Secondary School Teachers	106-107
V	**CONCLUSIONS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH**	**108-117**
5.1	Conclusions	108-112
5.2	Educational Implications	112-116
5.3	Suggestions for Further Research	116-117
VI	**SUMMARY**	**118-145**
	REFERENCES	**i-viii**
	APPENDICES	

LIST OF TABLES

TABLE	TITLE	PAGE (S)
3.1	District-wise, Educational Block-wise and School-wise Sampling Distribution of Senior Secondary School Teachers	66
3.2	Area-wise Description of Nature of Items and Serial number of Items in Computer Phobia Scale	69
4.1	Frequency Distribution and Descriptive Statistics related to Computer Phobia among Senior Secondary School Teachers	75
4.2	't' Value Showing Significance of Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Gender	78
4.3	't' Value Showing Significance Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Marital Status	83
4.4	't' Value Showing Significance Difference in Mean Scores of ' Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Stream	89
4.5	't' Value Showing Significance Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Locality	91

TABLE	TITLE	PAGE (S)
4.6	't' Value Showing Significance Difference in Mean Scores of ' Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their School Type	98
4.7	Views of Senior Secondary School Teachers about Computer Phobia	103
4.8	Views of Senior Secondary Schools Teachers regarding Reasons/Causes behind Computer Phobia	105
4.9	Suggestion forwarded by Senior Secondary School Teachers to Reduce Computer Phobia among them	106

LIST OF FIGURES

FIGURE	TITLE	PAGE (S)
4.1	Pie-Chart Showing Percentage Distribution of Senior Secondary School Teachers according to their Computer Phobia Level	76
4.2	Frequency Curve Showing Distribution of Computer Phobia Scores of Senior Secondary School Teachers	77
4.3	Gender-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure	79
4.4	Gender-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity	80
4.5	Gender-wise Difference among Senior Secondary School Teachers in Terms of Convenience	81
4.6	Gender-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia	82
4.7	Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure	84
4.8	Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity	85
4.9	Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Convenience	86
4.10	Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia	87

FIGURE	TITLE	PAGE (S)
4.11	Stream-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure	89
4.12	Stream-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity	90
4.13	Stream-wise Difference among Senior Secondary School Teachers in Terms of Convenience	91
4.14	Stream-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia	92
4.15	Locality-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure	94
4.16	Locality-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity	95
4.17	Locality-wise Difference among Senior Secondary School Teachers in Terms of Convenience	96
4.18	Locality-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia	97
4.19	School-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure	99
4.20	School-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity	100
4.21	School-wise Difference among Senior Secondary School Teachers in Terms of Convenience	101
4.22	School-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia	102

ACRONYMS

UNESCO	United Nations Educational Scientific and Cultural Organization
(LSI) and	Learning Style Inventory
ANOVA	Analysis of Variance
B. Ed.	Bachelor of Education
C.B.S.E	Central Board of Secondary Education
CAI	Computer Assisted Instruction
CD	Compact Disc
COMPAS	Computer Anxiety Scale
D.El.Ed.	Diploma in Elementary Education
DVD	Digital Video Disc
EFL	English as a Foreign Languages
HP	Himachal Pradesh
HPU	Himachal Pradesh University
I.C.S.E.	Indian Certificate of Secondary Education
ICT	Information and Communication Technology
ILT	Information Learning Technology
ISTE	International Society for Technology in Education
IT	Information Technology
JBT	Junior Basic Training
MTI	Measuring Technophobia Instrument
NCTE	National Council for Teacher Education
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
TLM	Teaching-Learning Material
U.P.	Uttar Pradesh
UGC	University Grants Commission

Chapter I

Introduction

CHAPTER-I

INTRODUCTION

Educational is an integral part of every human being. It moulds an individual to a good citizen who really is an asset of a country. Through the process of education, the individual acquires new habits, sentiments and attitudes, new knowledge, potentialities, abilities, purposes and ideals and these helps the individual in solving the problems of life more successfully to achieve superior adjustment onto his environment and to manipulate and exploit better forces of nature. Education is a mirror held against the face of a people. Education is the knowledge of putting one's potential to maximum use. Education dispels ignorance and is the only wealth that cannot be robbed. This importance of education is basically for two reasons. The first is that the training of a human mind is not complete without education. Education makes man a right thinker. It tells man how to think and how to make decisions. The second reason for the importance of education is that only through the attainment of education, man is enabled to receive information from the external world to acquaint him with the past and receive all necessary information regarding the present. Without education, man is as though in a closed room and with education, he finds himself in a room with all its windows open towards the outside world.

Mahatma Gandhi has once said that education is the all-round drawing out of the best in child and man- body, mind and spirit. This opens immense possibilities. Education should be a process which harmonizes a person's inner reality with the outer world, bringing about a change in both spheres. A seed left on dry soil will soon die, but if put into fertile soil, watered and manured, it eventually grows into a tree and produces sweet fruits. A child has much greater potentialities than a seed, but much depends on the way he is treated.

Tremendous changes are occurring in the world today and all these have influenced the ways and means of education. Without education, it is difficult for an individual to adjust with the changing environment of the modern world. It is a paradox that India is a rich country with full of poor people. Though in the ancient past, India had made notable contributions in various fields like philosophy, agriculture, medicine, etc. during this age of automation, it is like an adolescent in fever and is trying hard to achieve its past glory. According to Alterkar (1957), "Education has always been regarded in India as a source of illumination and power which transforms and ennobles our nature by the progressive and harmonious development of our physical, mental, intellectual and spiritual powers and faculties."

Education and technology have gone hand in hand with each other from the beginning of time. In early civilizations, education was meant for the different classes of society. The education in those times dealt with an oral tradition of the transmission of knowledge. As technology has progressed from papyrus and charcoal through slate and chalk, to moveable type for printing, education has evolved and changed. Technology has advanced more in the latter half of the twentieth century than in the previous 2,000 years. History has shown that modern economic growth has been inspired by a rapid and persistent upgrading of technology. Herschbach (1995) defines technology as "organized knowledge for practical purposes". Technology, however, as a distinctive phenomenon refers to the use of knowledge, materials, tools, techniques, systems, and sources of power to make life easier and better and to work more productively and efficiently. Education today faces three challenges- access, quality and cost. The tensions between these vectors make up the triangle of education. When the basic challenges of education are expressed in terms of this triangle, it is clear that traditional methods of teaching cannot meet them. By putting more

students in each class, access may go up and cost may come down, but the quality of education will be lowered. Evidence shows that technology can really increase access; improve quality and lower costs, all at the same time. Now a day's computer has become a popular and powerful medium of education, information as well as entertainment. It has become an integral part of modern life. Today a person who doesn't know about computer is looking like illiterate. So, practical knowledge of computer is becoming must for every literate person. It is becoming a fashion also. Computer assisted language learning is increasingly being used for educational purposes throughout the world. Many scholars have focused their attention on the use of computer assisted language learning and other educational aspects of computer technology. Yet it is the teachers who serve as the agents of change for the students in the adoption and use of computers by bringing the new concepts, ideas and equipment's into the classroom. These teachers, however, cannot serve in this role without the necessary skills, knowledge and attitudes required to introduce and to integrate computer assisted instructions successfully to the curriculum. If teachers are unsure of their computer knowledge and skills, they can be cautious about implementing computer assisted learning in the classroom teaching for their respective students. One possible result of this caution is computer phobia, which is anxiety about interactions with computers that results in a negative attitude, such as fear and avoidance. Ultimately, they might see themselves as victims of computers and lose the opportunity to acquire and manipulate this useful resource.

1.1 CONCEPT OF COMPUTER PHOBIA

Human being is curious by nature. Human being is always involved in new innovations and new ideas. One of its innovations is computer. Computer is being used in all spheres of life. It makes an

important contribution in modern age. Information technology collectively bounded all the uses of computers and new revolutions in the area of communication. Computers are being used in different places by many people in different fields. One-way computers help us is in our lives. We use the computer to communicate with people such as web conferencing with friends who are overseas, to look up on information about a particular topic, socialize on social networks such as face book or even to do something as simple as sending an email or digital cards to friends and loved ones. The computer has also managed to change us from reading hard copies of books, magazines and newspapers, to reading online digital documents such as online newspaper articles and eBooks. In education, teachers are now using power point to make their lecture slides which are used during their lectures and students are now able to download the lecture slides into their computers and store it as reading documents. In the working place, paper work is now slowly converting from manual printing and keeping documents to storing documents in the computer.

Computer has revolutionized the education field. In the present progressive era having computer knowledge practically is too much necessary. But there are many persons who fear to perform on computer; this is known as computer phobia. There is no consensus in the literature on the use of the terms such as computer anxiety, computer phobia and technophobia. In the studies performed so far this subject has been handled under some titles, computer phobia, techno stress, cyberphobia, computer aversion, technophobia, and computer anxiety. Although technophobia is becoming a commonly used term, appearing in newspapers and popular magazines with increasing frequency, in a pioneering work, defined computer phobia as: (a) a resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about

computers. Afterwards, technophobia has come to be known as computer phobia, and has been defined as: "(a) anxiety about present or future interactions with computers or computer related technology, (b) negative global attitudes about computers, and their operation or their societal impact; and/or, (c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction."

Computer phobia is an intense fear of something that possesses little of no danger. While people with computer phobia realize that these fears are irrational, they often find that facing or even thinking about facing the fear situation brings on a panic attack. One of the root causes of computer phobia is the rapidity of technological advance. In the present technological society, the impression is that artifacts such as computers are more valued than people. Thus, computer phobia is a particularly striking example of the effects of the rapid growth of a technological society.

Cantrell & Wong (1999) defined computer anxiety, which has often been linked computer phobia, refers to negative feelings associated with the use of computers.

Jay (1981) defined computer phobia as the negative attitude toward computers that results from computer anxiety.

Rosen and Weil (1992) further defined computer phobia as anxiety and a negative attitude toward present and future interactions with computers.

People suffering from computer phobia often hold a negative attitude toward computers, which in turn eventually causes avoidance of computers. It is also associated with technophobia, which refers to a phobia towards technology, and cyber phobia, which refers to a phobia towards computers.

The characteristic variables of computer phobia have also been widely researched over the last few decades with regard to age, Laguna & Babcock (1997) indicated that younger people are less likely to suffer from computer phobia. Some studies have suggested that females have a higher level of computer phobia or negative attitude toward computers than males (Levin & Gordon, 1989; Mcllroy et al. 2001; Rosen, Sears & Weil, 1987). In addition, students are less likely to have a high level of computer phobia than those who are not students.

Computer phobia is a significant constraint to the utilization of computers. The teacher's outlook toward technology, how they respond to it, how they present it, and how it helps achieve their vision of teaching and learning will affect the future accomplishment of technology. Teachers are expected to teach with innovative teaching methods like Computer Assisted Instructions and using a computer while teaching. However, at the same time, teachers face technological and psychological challenges like computer phobia. Computer phobia and computer anxiety are interchangeably used to describe the fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer. The integration of the computer into classroom activities is significantly less due to computer phobia.

1.2 CAUSES OF COMPUTER PHOBIA

The rapid development of technology affects every part of life. Despite the foundation, people know that technology has unexpected effects on them. In particular, computers are amazed even by the speed of progress within their subject matter. Computer age advance is a prime case when significant cultural change has occurred within the normal growing-life up's expectancy. In these ways, adults are looked at with whom the essential components of today's technological society have never been educated. This is the same as what andragogical advocates

call a separate, specialist part of education a fundamental goal behind the idea of grown-up training. Specifically proposed by Knowles, as technological change increases, adults have to start getting to know the new social orders that are growing, which are dependent upon new developments. One of the root causes of computer phobia is that the speed of advancement in technology together with the trend for specialized development have given the impression that ancient rare things such as computers are more esteemed than individuals as the highest motivation of the current technological society. This reflects the dehumanizing effects of adults in this time of increasing technology.

1.3 THE SYMPTOMS OF COMPUTER PHOBIA

Numerous scientists have portrayed the symptoms of computer phobia. The following is a rundown of such symptoms arranged from Jay, Maren, Kneller, and Wilcocks and Mason. Gentle computer phobia shows up for the most part as negative attitudes towards computers, for example,

- Resistance to speaking or thinking about computer technology,
- Fear and anxiety about computers,
- Hostile or aggressive contemplation or acts
- Fear of physical contact with the computer,
- Fear of contacting the computer for fear of breaking it
- Denial of the existence of computers
- Feeling threatened by 'computer adepts',
- Feeling you've been supplanted by a machine,
- Fear of loss of job status or job fulfillment
- Feeling de-acculturated (less human contact),
- Feeling aggressive towards computers,
- Role inversion individual expect the job of slave to the computer,
- Not needing to work with any 'logical machine

1.4 TEACHERS AND COMPUTER PHOBIA

Educational technology and computers play an important role in education. Since the use of technology is no longer confined to computer science, it is essential for all students and teachers to use and understand computers and implement technology in order to be successful in their future careers. Although an increasing number of teachers are using computers in education, not all of these teachers feel comfortable themselves for computer use. In other words, as all of the teachers are not likely to be heavy computer users, teaching and learning activities have a huge impact on educational technology. The way teachers view technology, how they respond to it, how they present it, and how it helps to accomplish their vision of teaching and learning, will affect the future implementation of educational technology. Some teacher training programs remain problematic due to the amount of time spent on the courses with technological contents. As mentioned in literature, many pre-service teachers believe that they are not adequately trained and often are not given appropriate tools in order to implement educational technology in their classroom. Many teachers exhibit high levels of computer phobia. While most teachers agree that computers are very useful tool, few of them use computers extensively in the classroom. Computer-phobic teachers either avoid teaching with computers; or, if they do teach with them, pass their anxiety and negative attitudes to their students. In literature, computer phobia is examined in terms of the correlates such as gender, age, computer experience, computer courses, and learning styles etc.

With the expansion of advance technologies in education, from past two decades computer became a central tenet which gave a new outline to the parameter of teaching and learning. Computers as a powerful tool to teachers, enhance and improve their teaching

competencies, but limited skills and no use of computer technology is a challenge for some teachers that creates a fear or anxiety among them. Computer phobia is a noteworthy limitation to the utilization of computers. Computer phobia characterized as protection from discussing computers or notwithstanding thinking about computers, fear or anxiety toward computers, and hostile or forceful contemplations about computers. Computer phobia is allied to computer anxiety while using learning computers skills or avoidance to use of computers that also alludes to negative sentiments related with the utilization of computers.

1.5 COMPUTER TECHNOLOGY IN TEACHING AND LEARNING

21st century is the age of information and technology. All over the globe, there is trend to use information technology in the teaching-learning process for improving learning outcomes. Education reform includes successful designing and implementation of information technology in teaching-learning process which is the key to success. There is a rapid shift of education technologies and political force, so as to shape the structure of the system of education across the globe. Efforts must be made by the educationists to change the process of teaching-learning in order to prepare the students to adjust themselves to the society which is rich in information and technology.

The education systems around the world are under the new Information and Technology (IT) to enhance the knowledge and skills of the students in the ensuing years of the 21st century. The 1998 UNESCO World Education Report insisted on implementing the ICT immediately in higher education, to pave way for quality education. Designing and implementing emerging new technologies in higher education will enable us to escape from conventional methods of teaching and learning. The ICT permits every aspect of higher education to conduct the instruction, research and service. As colleges and universities respond to today's

workforce and demographic needs are challenged, they begin to re-examine their assumption about the teaching by faculty and learning of students and how knowledge is acquired and retained. By implementing innovative activities through the use of advanced technologies, prevailing learning impediments can be eliminated. The ICT stimulates the learners to acquire quality research through teamwork, time management, self-management, adaptability, analytical thinking, global consciousness, basic communication, problem solving and guided instruction.

The computer is now regarded as a super-teaching machine. It's use in education has been tried as an innovation and it has proved its teaching efficiency in many developed countries. Teaching about computer makes students to understand what computers do, what computers cannot do, and how computers could be used to facilitate learning. Computers can be employed in schools in three generic ways. They can be used as a learning tool, as the object of the study and as a planning and management tool for teachers or school administrators. Nowadays, computers are used in the classroom as a support system to improve the teaching-learning process. It is also possible to use the computer to teach new skills or concepts to provide remedial teaching and to facilitate development of creative thinking and problem solving. Its other uses are evaluation of students' performance and classification of children according to their ability, preparation of timetables and schedules, allocation of learning materials according to individual needs and interests, maintenance of progress cards efficiently and confidently, providing information data for guidance and reference, provision for direct interaction between pupils and subjects in tutorial work and providing immediate feedback to students for better interaction and motivation.

Teacher's work can be made easier and faster with computers. Computer enhanced instruction refers to using computer to bring

additional dimensions to traditional teaching methods. This includes using computers to create instructional materials, slide shows, videotapes, worksheets, tests bulletin board material, rewards, incentives, games and display. It also includes using computer to increase personal productivity through grade book programs and way to find that instruction indeed enhanced. They are more productive, more organized because of the thought and planning required, and more efficient because of better record keeping. The learning environment is more appealing when materials are neatly and professionally generated. Finally, students generally have more positive impression for teachers when they use computer-based technology in the classroom.

Computer can be used as enabling tools for all students including students with special needs. Students who have difficulty with writing, spelling, mathematics, organization and sequencing find that computers make these tasks easier. We can use applications such as word processing programs, spreadsheets, and graphics programs as instructional tools. Such applications may help students to overcome programs that interfere with learning.

In the teaching-learning process, evolution of computer has passed through many stages. Application of computers in education has been identified by different authors and has been named i.e. computer-based education and Computer Aided Instruction.

1.6 INFORMATION TECHNOLOGY (IT) IN EDUCATION

The emergence of technology has been further applied to information, which has revolutionized the process of the transmission of information.

Information Technology refers to:

- Sharing and interchanging information such as knowledge, mental skills, motor skills and attitudes through the use of mass media especially electronics.
- Achieving success in this sharing and interchanging through communication which consists of receiving, i.e. hearing, seeing, accepting as nothing can change unless information is accepted and getting some action i.e. changing performance or behavior.
- Data processors which are a key component in Information Technology in the processing of data.
- Pre-service training for secondary stage is all the more important because secondary education is a link between elementary and higher secondary stage of education and occupies a crucial position in the system of education, as general education terminates here and the students at this level prepare for making choice through appropriate diversification of course like professional, arts and science course. At this stage, we need a vision to equip our students to meet the emerging trends. The survival of this category of students in the present high-tech and competitive society will only be through the knowledge of ICT. It has influenced all aspects of teacher education. It provides the capacity to store, to retrieve and to process e-content both fast as well as accurate.
- ICT is the scientific and technological discipline which deals with collection, storing, dissemination of information to the individual or group. ICT involves primarily the storage and communication of information. The world is converted into minute global capsule and anyone desirous of information would find it only a click way. ICT is a technology that aids in storage of data retrieval as and when required, telecommunication, browsing for information and saves time, efforts, paper, money and resources.

ICT represents one of the current applications of technology in teacher education. Information and Communication Technology (ICT) is the scientific, technological and engineering discipline and management techniques used in information handling and processing, their application. Their interaction with men and machines and associated social, economic and cultural matters. The application of ICT is mainly purposed on the teaching-learning process. The application of ICT provides vast array of powerful tools that may help in transforming the present isolated, teacher centered and text bound classroom into each student-focused interactive knowledge environment.

In 1998, the UNESCO in its world Education Report, "Teachers and Teaching in a Changing World" described the radical implications of ICT in the conventional teaching-learning process. Now in the present situation, ICT has become an important part of the curriculum of teacher education. The following essential conditions must be met for the effective use of ICT in the teaching-learning process. Students and teachers must have sufficient access to digital technologies and the internet in classrooms, schools and teacher education institutes. High quality, meaningful and culturally responsive digital content must be available for teachers and learners. Teachers must have knowledge and skills to use the new digital tools and resources to help all students to achieve high academic standards.

The use of ICT can make substantial change in education and training mainly in two ways. Firstly, the rich representation of information changes learner's perception and understanding of the content secondary, the vast distribution and easy access to information can change relationship between teachers and students. ICT can also provide powerful support for educational innovations.

By using ICT Technologies such as computer, laptop, digital cameras, video, internet, websites, CD-ROMs, DVDs, digital libraries,

computer mediating conferencing, video conferencing projectors etc. we can overcome all barriers in communication and instructions. ICT can be used as a tool for training and support of teachers, regardless of geographical dispersion. Therefore, the challenge for teachers and teacher education institutions has been to create a new generation of teachers capable of employing a variety of technology and tools in all phases of academic, administrative, research and extension functions.

1.7 UTILITY OF INFORMATION TECHNOLOGY (IT) FOR TEACHERS

In education, ICT is an assisting tool. ICT is a medium of teaching and learning. This refers to ICT as a tool for teaching and learning, the medium through which teachers can teach and learners can learn. It appears in many different forms, such as drills and practice, exercise in simulations and educational networks. ICT is a tool for organizing and managing schools. ICT in teacher education has the capacity to accelerate major changes both in pre-service and teacher training as well as in in-service teacher professional development.

The new ICT has for conventional teaching and learning, the following essential conditions must be met:

- With the advent of new information-based technologies i.e. internet and online databases, there has been access to enormous quantities of information. This information help teachers to develop or improve lesson plans, exchange ideas, obtain information and find free animation and simulation to enliven their lesson.
- Students and teachers must have sufficient access to digital technologies and the internet in their classrooms, schools and teacher educational institutes.
- The new ICT enables self-paced learning through various tools such as assignments, tutorials, computers etc. with sensitivity to different

learning styles and continuous assessment of student's progress. With the result, the teaching-learning enterprise has become more result oriented.

- High quality, meaningful and culturally responsive digital content must be available for teachers and learners.
- ICT facilitates the educational transaction between providers and users by keeping students well informed about the courses, enhancing teacher-learner contact through e-mail, chat sessions, etc. enhancing active learning, sharing ideas, providing immediate feedback, encouraging paced learning and allowing for effective mapping of learning pathways.
- Teachers must have knowledge and skills to use the new digital tools and resources to help all students to achieve high academic standards.
- IT enhances the initial preparation by giving good teaching and training materials, use of simulators, recording and feedback in teaching.
- With the help of ICT, teachers can access with colleagues, institutions and universities, expertise rich resources in cyber space.
- IT enables interaction with students over a physical distance.
- Didactic software and intelligent tutoring systems can dramatically reduce the cost of teacher training.
- ICT provide life-long professional development by providing courses in a virtual situation, training on demand orientation and refresher courses through video conferencing and online.
- ICT facilitates sharing of ideas, experience as well as collaborating on projects and exchange materials through virtual communities. Therefore, teachers should have deep knowledge and favorable attitude towards proper use of ICT.

1.8 NEED OF INFORMATION TECHNOLOGY FOR TEACHING-LEARNING PROCESS

The schools are to transform the curriculum and teaching-learning process to provide students with the skills to function effectively in this dynamic information rich and continuously changing environment. This environment involves a change in the roles of both teachers and students. The role of the teacher with change from knowledge transfer to that of learning facilitator, knowledge guide, knowledge navigator and co-learning with the students. Students will have great responsibility for their own learning in this environment as they seek out, find, synthesize and share their knowledge with others. ICT provides powerful tools to support the shift to student-centered learning and the new roles of teacher and students. Thus, a new learning environment can be created with the use of technology. The challenges confronting countries, regions and universities is to address the following basic principles for ICT in schools and teacher education (Society for Information Technology and Teacher Education, 2002)

- ICT should be infused into the entire education program.
- Technology should be introduced in context.
- Students should experience innovative ICT supported learning environments in their teacher education programme.

The most critical factor in the successful infusion of ICT into schools and Teacher Education is the extent to which the teachers and teacher educators have the knowledge and skills for the use of ICT in their teaching activities. But for the successful integration of ICT in Teacher Education, the teacher educators have to demonstrate their ICT competencies along with already identified competencies. These competencies, which are developed based on 'National Education technology standard for teachers, published by International Society for Technology in Education (ISTE) are listed below.

- Demonstrate introductory knowledge, skills and understanding of concepts related to ICT.
- Involve in planning and implementing ICT professional development training.
- Plan, design and demonstrate the use of multimedia application for instructional use.
- Use technology to support learning in difficult subject matters.
- Make extensive use of internet as instructional tool.
- Internet through e-mail forum with trainees, practicing schools and parents.
- Use technology resources to collect and analyze data, interpret results and communicate finding to improve instructional practices.
- Address issues related to acceptable use policies, student's safety, ethics, security and copyright.
- Provide equitable access to technology resources for all students.

These competencies need to be mastered by the teachers during their professional training. Acquiring these competencies by the teacher already in service is equally important to ICT in schools. Realizing the importance of the role of the teacher, the policy document reiterates that no people can rise above the level of its teachers. This is the challenge. In this context, teachers have to shoulder a greater responsibility, namely educating future and nation.

This is why teachers normally use some combination of lecture, text and hands on laboratory for conveying information. With the advent of the internet and the multiple formats that can be communicated over the world wide web, we now have several new and exciting ways to present information of animation, moving pictures and sound into lessons, which extends our abilities to present materials that encourage

student's interaction with the subject matter. Pictures and animations help to bring life to scientific principles, and multimedia allows students to take a more active role in learning. They can watch experiments in action, see microorganisms up close, and use a mouse or keyboard to navigate images, simulations and interactive materials. One of the advantages of using multimedia is that it conveys information quickly and effectively to all the students and keeps them interested in learning. The usage of technology in Mathematics education plays an important role as it provides teachers with a new method of teaching in a situation where students find it difficult to learn mathematics, to remember the lengthy formulas, and to work out problems, the use of technology comes to our rescue.

1.9 DIFFERENCE BETWEEN CONCEPT OF IT, ICT AND ILT

We are using desktop computers for different purposes, for example, teachers use computer to make power point for creating documents e.g. word file, excel etc. In other words, in IT we take stand-alone computer or laptop as a tool to perform our tasks. Therefore, hardware in IT refers to the basic box and peripherals such as scanners, printers, CD-ROM, DVD drive, pen drive and so on; software includes some packages like word processors, spreadsheets, databases, graphics and presentation packages.

- **Information Communication Technology (ICT):** Anyone can contact with any person from any area of the world easily. This is possible because of the interconnection between individual computers, mobiles, routers, laptop etc. This networking provides the sharing of information by means of website, e-mail and instant messenger, and many other services. This is because of ICT. So, ICT is defined as the interconnection to stand alone computers across and between

institutions and is a general set of tools and skills that can be applied to a wide range of organizations. Therefore, hardware in ICT includes: server machines, interfaces, access networks, interconnecting medium (technical channels) including network services, protocols, server programs, client programs etc. Examples of ICT software are: web browser like internet explorer, Mozilla Firefox, Apache web server, windows net meeting etc.

- **Information Learning Technology (ILT):** ILT is nothing but the application of the IT and ICT to education. For example, companies give training to their employees using IT/ICT to make manpower more efficient and effective. So ILT includes both learners and teachers. Thus, in ILT, we take about psychological efforts of students, their online learning behavior, communication methods etc. and the pedagogical methods, way of presenting the materials etc. Now, the internet is a popular tool for ILT.

1.10 BENEFITS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

- To train students in skills which they will need in further education and ongoing learning throughout the rest of their lives and for their future jobs.
- To provide access to information and communication outside the classroom e.g. video conferencing with students in other countries using the internet etc.
- To support teacher development, e.g. through external works.
- To support and potentially transform the learning, teaching process in many and diverse ways. ICT is a teaching tool. Its potential for improving the quality and standards of pupil's education is significant.

- **GENERAL BENEFITS**

- Enables greater autonomy.
- Unlocks hidden potential for those with communication difficulties.
- Enables students to demonstrate achievement in way which might not be possible with traditional methods.
- Enables tasks to be tailored to suit individual skills and abilities.

- **ICT BENEFITS FOR STUDENTS**

- ❖ Computer can improve independent access for students to education.
- ❖ Students with special educational needs are able to accomplish tasks working at their own pace.
- ❖ Visually impaired students using the internet can access information alongside their sighted peers.
- ❖ Students with profound and multiple learning difficulties can communicate more easily.
- ❖ Student using voice communication aids gain confidence and social credibility at school and in their communities.
- ❖ Increased ICT confidence amongst students motivates them to use the internet at home for schoolwork and leisure interests.

- **ICT BENEFITS FOR TEACHERS**

- ❖ Reduces isolation of teachers working in special educational need; enabling them to communicate electronically with colleagues.
- ❖ Supports reflection on profession practice via online communication.
- ❖ Improves skills of staff and a greater understanding of access technology used by students.
- ❖ Enhances professional development and the effectiveness of the use of ICT with students through collaboration.
- ❖ Materials already in electronic form e.g., from the internet are more easily adapted into accessible resources such as large print or Braille.

- **CHALLENGES OF ICT**

It has been found that it is not easy to take IT to rural areas. There are many problems like, rural environment, lack of instructional facilities, lack of awareness, financial support, lack of coordination, appropriate allocation of resources, literacy and language problem etc.

1. Instructional Facilities: There is a need to narrow down the quality gap between rural and urban educational centers. Education institution in rural areas requires instructional facilities like digital facility, library resources, laboratory equipment and internet connectivity.

2. Infrastructure: Information Technology requires a special type of infrastructure e.g. clean place, cool environment, suitable furniture, uninterrupted regular power etc. All those things are not available at most of the places in rural areas. Universities can take initiative and start such types of centers in remote areas of their own jurisdiction.

3. Expert Services: IT professional are not interested to go to villages because they think in villages there is no scope. All IT professionals want to do the work in big cities. School teachers are not keen to learn computer because there is no incentive for extra work. They think it will increase their workload. Universities can help the rural society with expert services of their faculty members according to pre-decided objectives and time schedule in the villages or their own institutions with required facilities without any changes.

4. Lack of Awareness: The people in villages are not aware about internet and use of computer. It is not their requirement. They work in fields and farms and earn bread. Their requirements of life are very few. Majority of them didn't see the computers. In cities there are thousands of cyber cafes but in a village, which is 20 KM away from city there is not a single cyber cafe.

5. Lack of Funds: It is very expensive. The government has no funds to launch it in rural areas. Under the scheme of Operation Blackboard, one or two computers are provided to the school in cities, but it is not the situation. It requires internet connection, phone facility and extra funds for maintenance and schools and colleges cannot afford it.

6. Lack of Coordination: Nearby universities and other institutions especially private institutions have tremendous facilities. But there is no coordination between rural schools and these institutions. If they are willing to do the things there are certain problems. How can universities help? If school students are brought to institutes then who will take the responsibility for their learning? Nobody wants to take the risk. Van facility should be provided so that transport problem is solved.

7. Lack of Knowledge of English: Majority of people living in villages are illiterate. They can't speak even Hindi well. Computers require knowledge of English. This is a great barrier to learning computers. Due to language problem, they hesitate to learn computers.

The challenges confronting our system of education are; how to transform the curriculum and teaching process so that students can perform effectively in a dynamic, information rich and continuously changing environment. ICT can change traditional concept of learning process and develop new processes based on digital technology. It can definitely create a new learning environment and information rich society. It is essential to redefine the role and responsibility of students to meet the challenges of ICT in 21st century. This is nothing but student-centered learning.

1.11 SIGNIFICANCE OF THE STUDY

Now a day's computer has become important part and parcel of our life. Almost all our daily activities one way or the other are associated with computer. Almost everyone is having a personal computer in their

homes and only a minimum percentage of them are regularly using it. Many of them are rarely using computers due to many reasons and one such reason may be their fear towards using the computer. Computers are increasingly influencing many aspects of our existence from our school life to our work environment, as well as many of our leisure activities. As more tasks involve human-computer interaction, computer literacy should become more and more positively correlated with both occupational and personal successes. Information technology has made a considerable impact upon almost every aspect of society. A working familiarity with IT is becoming increasingly important, particularly in business and educational contexts. The computer is neither a mere machine or hardware nor a human system or a software. But it is a combination of all these. Computer plays an important role in teleconference to share ideas, data bases to provide information, desk top publishing etc. with the optimum use of technology we can solve educational problems whether related with managements or with learning and administration at a proper time. Hence, computer has touched the life of all individual whether directly or indirectly. Computer is used for fulfilling the purpose of education, management, information and as well an entertainment. Due to which the craze for computer is increasing day by day. By an estimate between 8 and 10 billion work hours are wasted annually by inexperienced or fearful employees fretting over computer tasks. Curing computer phobia or fear of computer is too much needed. Keeping this in a view it is the responsibility of the teachers to introduce the students with new technology and make them aware. It is too much necessary for them to have practical knowledge of computer because the scope of computer in each and every field of life is rapidly increasing day by day. It saves time and money over the long term.

If the teachers don't have computer's knowledge then they can't survive in the present technological and progressive society. But it is a

very serious matter that there are many computer phobic teachers who have fear of computer. They freeze up when they asked to perform a new task on the computer. Such types of computer phobic teachers are present in our schools.

In this era of technological advancement, computer education is considered to be an essential ingredient of education. But computer phobia of a teacher is an important factor in determining his progress and also his student, in the field of education. Therefore, it is a felt need to study the computer phobia of teachers. There is lack of researches in the area of computer phobia among teachers teaching in senior secondary schools of Himachal Pradesh. The results of present study will be of immense help for teachers as well as for administrators. Keeping into consideration the above facts, present work was undertaken by the investigator.

1.12 STATEMENT OF THE PROBLEM

The problem selected for research may be defined as under.

"COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS AS RELATED TO CERTAIN SOCIO-PERSONAL AND ACADEMIC VARIABLES"

1.13 OBJECTIVES OF THE STUDY

The study was conducted to achieve the following objectives:

1. To study computer phobia among senior secondary school teachers.

2. To study gender-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

3. To study marital status-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity
iii. Convenience

4. To study stream-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity
iii. Convenience

5. To study locality-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity
iii. Convenience

6. To study school-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity
iii. Convenience

7. To study the different causes/reasons of computer phobia among senior secondary school teachers.

8. To find out the various remedial suggestions for the reduction of computer phobia among senior secondary school teachers.

1.14 DELIMITATIONS OF THE STUDY

1. The sample of the present study included only senior secondary school teachers teaching in government and private schools of Himachal Pradesh.
2. The study was confined to government and private schools of two districts (Mandi and Kullu) of Himachal Pradesh.
3. The present study was restricted to two variables i.e., computer phobia as dependent variable and gender, marital status, stream, locality and school type as independent variables.
4. The study was confined to a sample of 375 senior secondary school teachers.

1.15 OPERATIONAL DEFINITION OF TERMS USED

Following terms have been used in the study:

1. Computer Phobia: Computer phobia is a fear or dislike of advanced technology. It invokes a wide range of negative emotions, such as anxiety, incompetence, fear, stress and nervousness. It not only creates psychological imbalances but shifts human nature from reality. In the present study the level of computer phobia among teachers was assessed by 'Computer Phobia Scale' developed and standardized by Dr. S. Rajasekar and Dr. P. Vaiyapuri Raja (2018).

2. Senior Secondary School Teachers: It refers to the teachers teaching in government and private senior secondary schools of district Mandi and Kullu of Himachal Pradesh.

3. Socio-Personal Variables: In the present study, socio-personal variables refer to gender, marital status and locality.

4. Academic Variables: In the present study, academic variables included stream and school type.

Chapter II

Review of Related Literature

CHAPTER- II

REVIEW OF RELATED LITERATURE

Undertaking a review of a body of literature is often seen as something obvious and a task easily done. In practice, although research students do produce what are called reviews of the literature, the quality of these varies considerably. Many reviews, in fact, are only thinly disguised annotated bibliographies. Quality means appropriate breadth and depth, rigour and consistency, clarity and brevity, effective analysis and synthesis. In other words, the use of the ideas in the literature is to justify the particular approach to the topic, the selection of methods and demonstration that this research contributes something new. The originality of a research topic often depends on critical reading of a wide-ranging literature. The nature of these concerns, on one hand, immersing oneself in the topic to avoid the shallowness of quick and "dirty" research and on the other, there is the need to identify the key ideas and methodologies from which some contribution to knowledge might be made. Without a systematic search and critical reading of the literature, it would be very difficult to see how academic research could make a new application of a methodology or contribute in some way, no matter how small to knowledge. In other words, knowledge generation and understanding are an emergent process and not a universal product. In order to know the nature and character of the implications of a development you need to know the intellectual context of the development. A literature review is a body of text that aims to review the critical points of current knowledge on a particular topic. Most often associated with science-oriented literature, such as a thesis, the literature review usually precedes a research proposal, methodology and result section. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as the justification for future research in the area. A good literature

review is characterized by: a logical flow of ideas; current and relevant references with consistent; appropriate referencing style; proper use of terminology; and an unbiased and comprehensive view of the previous research on the topic. It helps with all types of assignments as well.

2.1 PURPOSE OF REVIEW OF LITERARURE

The importance of review of related literature cannot be denied in any research. It works as guide post not only with regard to the quantum of work done in the field but also enables us to perceive the gaps and lacuna in the concerned field of research. The similar or related studies carried out by researchers at various levels are called review of related literature. The various sources of it are the research reviews and survey books, journals, newspapers, records, documents, indexes, abstracts, dissertations and other information's directly or indirectly concerned with the problem of investigation. Importance of related literature is presented below:

- To indicate whether the evidence already available solves the problem adequately without requiring further investigation. It avoids the replication.
- To provide the sources for hypotheses. The researcher can formulate research hypotheses on the basis of available studies.
- To suggest method, procedure, sources of data and statistical techniques appropriate to the solution of the problem.
- To provide some insight regarding strong points and limitations of the previous studies. To enable the researcher to improve his own investigation.
- To locate comparative data and findings useful in the interpretation and discussion of results. The conclusions drawn in the related studies may be significantly compared and may be used as the subject for the findings of the study.

- It helps in developing expertise and general scholarship of the investigator in the area.
- Review of related literature, besides, allowing the researcher to acquaint himself with current knowledge in the field or area in which he is going to conduct his research serves the following specific purpose;
- The review of related literature enables the researcher to define the limits of his field. It helps the researcher to delimit and define his problem.
- It is crucial step to minimize the risk of dead ends, rejected topics, rejected studies, waste efforts, trial and error, activity oriented towards approach, already discovered by previous investigations and even more important erroneous findings on a faulty research design. It makes study comparative and critical.
- It provides ideas, theories, explanations and formulation of hypotheses in solving the problems and interpreting the findings.
- Thoroughness and comprehensiveness, evaluation and synthesis of the sources are the qualities of related literature.

From the above discussion, it is clear that for any worthwhile investigation, a review of related literature in the field of investigation is of great help to the investigator. Keeping in mind, the importance of the related literature, the investigator explored the previous literature relevant to the present study and could collect the following research studies, which bear direct and indirect relevance to the present study:

Koohang (1989) explored the levels of anxiety over computer use of high school students based on sex, grade level, and prior computer experience. Subjects were 67 high school students, 38 males and 29 females. The instrument used was a computer anxiety subscale of 10

items from an instrument designed by Loyd and Gressard (1984). The items presented positively and negatively worded statements about reactions to computer use, and students were asked to respond using a four-category scale ranging from strongly agree to strongly disagree. The data showed that both gender and computer experience, but not grade level, produced a significant difference in computer anxiety. Male students had higher mean scores, indicating less anxiety, than female students, and students with more computer experience received higher mean scores than students who had less computer experience.

Weil and Rosen (1995) conducted nationwide study on teachers. The study examined "technophobia" as an explanation for low levels of computer utilization. Elementary teachers (N = 171), secondary science teachers (N - 117), and secondary humanities teachers (N = 200) in 54 schools. Results indicated that many teachers were technophobic, particularly elementary teachers and secondary humanities teachers; teachers were most worried about dealing with the actual computer machinery in their classroom, about computer errors, and about learning to use computers; predictive models showed that although computer experience is the most prominent predictor of technophobia, it is not the only predictor– age, gender, teaching experience, computer availability, ethnicity, and school socioeconomic status also play an important role in predicting technophobia.

Chow (1995) conducted a study to find the role of institutional factors in Computer Phobia. The sample of 200 students was selected randomly from the higher learning institutions of Hong Kong. The results showed that the institutional factors were negatively related to Computer Phobia. It also indicated that the level of Computer Phobia would be reduced if the computer learning environment is designed such that it is more comfortable and conducive to learning.

Yang, Mahamed and Beyerbach (1999) investigated how computer related experience affects the relationship of computer anxiety in vocational technical educators to selected demographic variables; learning style, age, gender, ethnic/cultural background, teaching/ professional area, educational level and school type. The participants were selected from vocational technical educators in Dade County, Florida. Survey research was used to get specific information were used for collecting data learning style inventory (LSI) and Computer Anxiety Scale (COMPAS). The results of the study indicated that there was no relationship between computer anxiety and age, ethic/cultural background, teaching/professional area and learning styles while computer related experience, educational level and school type were found significantly related to computer anxiety.

Anthony, Clarke and Anderson (2000) studied technophobia and personality subtypes in a sample of South African university students. This study examined levels of technophobia in a sample of 176 South African university students enrolled in first-year computing and psychology courses. Technophobia, which is described as negative psychological reactions towards technology, was assessed using Rosen and Weil's Measuring Technophobia instruments. The levels of technophobia were correlated with each of the five dimensions (neuroticism, extroversion, openness, agreeableness, conscientiousness) of the NEO-Five Factor Inventory. The results indicated a positive correlation between technophobia and Neuroticism, and an inverse correlation between technophobia and Openness. Technophobia was found to be inversely correlated with computer experience, weakly correlated with age, but not associated with gender.

Maldonado et al. (2001) found that introverts sent computer mediated messages with an extroverted tone and these messages

contained more information than those sent by extroverted individuals. The Internet offers introverts the opportunity to express their Facebook 44 true self in a more controlled environment where they can gain social recognition without feeling over stimulated by face-to-face interaction. Thus, introverted individuals would be expected to spend more time interacting on social networking sites than extroverted individuals. Extroverts on the other hand behave the same way on the Internet as they do offline, seeking stimulation by socializing with friends and maintaining their outgoing character.

Ajayi, Olatokun and Tiamiyu (2002) investigated the prevalence and correlation of computer-related behavioural variables among students and staff of the University of Ibadan, Nigeria. The behaviours were information anxiety, computer phobia, obsessive computing, and computer work stress. Validated scales were designed to measure these behaviours, and descriptive and correlational analyses were performed. Information anxiety and obsessive computing were prevalent among the respondents, but computer phobia was not. Work stress correlated directly with both information anxiety and computer phobia, and computing experience correlated inversely with information anxiety, computer phobia and obsessive computing.

Rajasekar and Sini (2005) studied 'Internet Knowledge of Research Scholars.' The objectives of the study were to find out the internet knowledge of research scholars of various subjects in Kerala University and to assess the differences across different categories of scholars based on their residence, gender, and faculty. The investigator had used normative survey method in the study. The investigator constructed and validated an internet knowledge test. It consisted of 30 multiple choice questions needed 30 minutes for answering. Mean and standard deviation of the internet knowledge scores of the entire sample

and sub-sample were computed and the results indicated that the internet knowledge of entire sample was relatively high (mean=16.25). The male research scholars had relatively high internet knowledge than the female research scholars. The internet knowledge of research scholars belonging to science subjects was relatively high (mean=18.74). The investigator found no significant difference between urban and rural research scholars of various subjects of science subjects.

Amnmoetti and Giorgetti (2006) observed that the computer could also be used to free the teacher from presenting remedial session to spend more time engaged in teaching time by the use of multimedia.

Penuel (2006) found that teachers commonly start by adapting traditional teaching strategies rather than embracing collaborative project-based learning environments. Teachers were encouraged to explore different ways to cover address curriculum and extend students thinking using technology.

Rajasekar and Vajayapuri (2006) conducted a study on computer phobia of higher secondary teachers. Normative survey technique was adopted for study. Cluster sampling technique had been used in the selection of 670 teachers, a score to measure the teacher's Computer Phobia was constructed and standardized by the author and found that the locale of teachers, teachers who attend and those who do not attend computer classes and the teachers who surf in the net and those who do not surf in the net caused significant difference in respect of their computer phobia.

Witte, Frank, and Lester (2007) investigated the association between shyness and Internet usage, 88 undergraduate students completed the Revised Cheek and Buss Shyness Scale, the Online Cognition Scale, a computer/Internet familiarity scale, the Eysenck

Personality Questionnaire Revised (short version) and the Abbreviated Duke Social Support Index. Significant correlations were found between shyness, Internet use, and personality traits. A stepwise regression analysis indicated that shyness was predicted by introversion, neuroticism, and problematic Internet usage as assessed by the Online Cognition Scale.

Umoren and Bassey (2007) conducted a study to find computer phobia among undergraduate student's performance in introduction to computer. The ex-post facto design was used for the study. The sample of study was consisted of 1000 undergraduate students. The questionnaires designed and validated by researchers were used. The result of analysis showed that undergraduate students without computer phobia performed significantly higher than students with computer phobia. Male undergraduate students had less phobia and performed significantly higher than females. Undergraduate students from science faculties had less phobia outperformed those of arts and social science education.

Tella (2007) conducted a study to assess secondary school teacher's uses of ICTs in Nigeria. This study examined Nigeria secondary school teachers' uses of ICTs and its implications for further development of ICTs use in Nigerian secondary schools. The study through census drawn on 700 teachers from twenty five purposefully selected private secondary schools in Ibadan, Oyo state, Nigeria. This comprised 430 males and 270 females. Their age ranged from 25–45 years with a mean age of 35 years. A modified instrument tagged Teachers ICT use survey adapted from ICT survey indicator for teachers and staff by UNESCO (2004) and ICT Teachers Survey by New Zealand Ministry of Education MINEDU (1999) were used for the collection of data. The study concluded that although teachers generally had access to ICTs in their various

schools (except e-mail and Internet because their schools are not connected to the information highway), technical support were lacking in the schools and teachers lack expertise in using ICT. These factors were perceived as the prominent factors hindering teacher's readiness and confidence in using ICTs for job delivery.

Mehra (2007) in her research study entitled, "Teacher's Attitude towards Computer Use: Implications for Emerging Technology Implementation in Educational Institutions" conducted on a sample of 200 government senior secondary school teachers from Chandigarh of Punjab State and revealed that teachers possessed fairly positive attitude towards computer uses.

Rajasekar and Raja (2007) conducted a study entitled, "Higher Secondary School Teachers' Computer Knowledge and their Attitude towards Computer" on a sample of 670 higher secondary school teachers from Cuddalore district of Tamilnadu by using Computer Knowledge Test (2007) and Attitude Towards Computer Scales by Kumaran D. and Selvaraj K. (1997). The objectives of the study were to find the level of computer knowledge of higher secondary school teachers and to study the attitude of higher secondary school teachers towards computer. The results of study found that 16.70% teachers belonged to the high level of computer knowledge and 83.30% belonged to the low level of computer knowledge. 60.40% teachers had favorable attitude towards computer and 39.40% had relatively unfavorable attitude towards computer.

Lile (2008) found that laptop learning that is important to develop a school vision incorporating the school community's expectation for laptop program. The purpose of laptop programme should come from identified students' needs in relation to areas for academic improvements.

Rafeedali (2009) in his study entitled 'Computer- based Technology and its Pedagogical Utility' pointed out that the higher secondary school teachers were far behind in utilizing the opportunities of information technology resources in the field of education and their life as well. They were comfortable with traditional teaching materials and old methods of teaching.

Ursavaş and Karal (2009) conducted a study to determine the level of pre-service teachers' computer phobia. Whether or not computer phobia meaningfully varies statistically according to gender and computer experience has been tested in the study. The study was performed on 430 prospective teachers at the Education Faculty in Rize/Turkey. Data in the study were collected through the Computer Phobia Scale consisting of the Personal Knowledge Questionnaire, Computer Anxiety Rating Scale, and Computer Thought Survey. In this study, data were analyzed with statistical processes such as t-test, and correlation analysis. The study discovered that pre-service teachers' computer experience had a substantial effect on their level of computer phobia. When compared to less experienced teachers, more experienced teachers had more computer thoughts and less computer fear. Male pre-service teachers exhibited elevated anxiety related to computer and reduced anxiety related to computer than females. Although male pre-service teachers had higher computer anxiety scores, they have lower computer thought scores. It was also observed that there was a negative and intensive relation between computer experience and computer anxiety. Meanwhile it was found out that prospective teachers using computer regularly indicated lower computer anxiety.

Sharma and Jyoti (2009) compared computer phobia of teacher trainees and management students. The data were collected on the 300 sample subjects selected through stratified random sampling by

employing a scale to measure the computer phobia of professional students, which was constructed and standardized by the investigators. The collected data were subjected to t-test for large independent groups and means of different groups were represented in Bar graphs. The outcomes of the research investigation concluded that the teacher trainees were founded more computer phobic than management students.

Olumide et al. (2010) conducted a study on information and communication technology adoption among adults in South Western Nigeria. The 59 respondents in the four large cities, Lagos, Ibadan, Abeokuta and Oshogbo, Akure, Ilorin and Ado-Ekiti, all capital cities in South Western Nigeria, were generally representative of all the adults in the south western Nigeria. The survey method was employed. A multi-item questionnaire for PEU and PU was pre-tested, validated and administered. Findings from the study showed that the fear of using technology was subsumed by the benefits accruable from usage. Results from the study also gave insights into subtle but important factors that create ICT and reduce Phobia among adults. The study concludes by recommending acceptable use environment that will provide positive experiences with ICT products and applications among the target group.

Alaba and Biodun (2010) conducted a study to investigate the extent to which computer efficacy, computer use and Computer Phobia could predict the level of student's 57 academic performance in computer graphics course. The study adopted the descriptive research design. A total of 189 undergraduates of Olabisi Onabanjo University, Nigeria, served as sample for the study. The results of the study indicate that computer use and efficacy significantly play role in reducing phobia towards accomplishing given academic tasks via the computer.

Arulsamy and Sajeetha (2010) in their article behavioral therapy for technophobic teachers observed that unless teachers adopt the ultramodern innovation and technologies, it is not possible for them to meet the challenge of globalization in the millennium. They need to be equipped with new perspectives, principles, strategies and a new mind set to fulfill their role effectively as they carry on with their noble profession.

Onkol, Zembat and Balat (2011) studied that computer use attitude, knowledge and skill, habits and methods of pre-school teacher. The study's goal was to investigate pre-school teachers' attitudes regarding computers, as well as their knowledge, skills, and habits. A sample of 127 educators of 24 schools (both public and private sector) was taken. For sample selection, the researcher employed a random sampling procedure. The computer tool utilized in the investigation was based on a measurement instrument created by Qui Chen and Chang (2003). The received data was examined by two-way ANOVA. The study's findings demonstrated that no substantial variation existed among different age groups of educators instructing within the school.

Sharma and Sharma (2011) studied awareness of computer technology among student- teachers in Allahabad city and found that the prospective teachers had very less knowledge of computers. Student-teachers lack knowledge of fundamental concepts and skills for applying technology in educational settings. Student-teachers and teacher educators were found to be not having experiences in browsing and knowledge of web-site addresses.

Kutluca (2011) conducted a study on computer usage and attitudes towards computers of prospective pre-school teacher. The study determined the state of potential pre-school teachers' computer usage as well as their attitude toward computers, as well as numerous elements

influencing their opinions. The poll contained a portion analysing the independent variables gender, grade, frequency of computer use, computer experience, computer competency, computer ownership, and taking computer courses for the study. As a sample, 126 prospective pre-school instructors were chosen from Turkey's faculties of education. As a data collection tool, a computer usage questionnaire and a quantifying scale for computer attitude developed by Berberoglu and Koglu 1992 was provided. The data was analysed using t-test for group comparison, as well as one-way ANOVA followed by Tukey post-hoc was used to delineate the group responsible for instigating the variation during comparative estimation. It was discovered in this study that there was a considerable disparity between male and female attitudes regarding computers. When compared to female pre-school teachers, male pre-school teachers show a more favourable attitude toward computers. According to the observations, existence of substantial variation in between the frequency of computer usage, computer experience, and views on teachers' attitudes toward computers was recorded. It also demonstrated a high level of positive attitude toward computers among potential pre-school teachers.

Yadhollahi and Rahimi (2011) studied the level of technology relating to information and communication used in imparting language skills and components in EFL programmes in Iran. It investigated the impact of EFL teachers' personal and technological qualities on ICT utilized in English lessons. During data collection, a sample-size of 248 teachers was chosen using a stratified random sampling technique (111 men and 137 female EFL educators). Several scales (ICT Rating Scale, Computer Anxiety Scale, Computer Literacy Questionnaire employed and Computer Attitude Questionnaire with Personal Information Form) were used. Descriptive statistics, the Chi square test, the correlation approach, and multiple regression analysis were utilized for data

evaluation. The findings showed that EFL teachers use technology primarily in teaching and listening, followed by speaking, vocabulary, pronunciation, reading, grammar, and writing. Furthermore, the research showed that if teachers have developed a selective ICT used strategy based on the nature of language skill components that are taught, with a general tendency to use digital portable devices. The study also found that ICT use was inversely associated to teacher age, years of teaching experience, computer ownership, computer knowledge, and uses, but not to attitude or gender.

Kezaih and Gertrude (2011) conducted a study to determine whether technophobia exists among female undergraduate students of Imo State University. Descriptive survey study was conducted on sample of 200 female undergraduate. A questionnaire designed by the researchers was used and the findings showed that technophobia did not affect the students' choice of course but affected their academic performance and knowledge base negatively. Technophobia can however be prevented by early exposure of females to computer use, possessing personal computers, providing computer facilities in school, and lecturers giving computer-based assignments/projects.

Sandhya and Sachin (2012) conducted a study on ICT culture and computer phobia among pupil-teachers in Indian context. The present study was conducted in Ghaziabad District of Uttar Pradesh. All Prospective teachers studying in B.Ed Colleges in Ghaziabad district constituted the population for the present study. Multistage stratified random sampling technique was adopted for gathering the data. The sample of the study was 224 prospective teachers from the randomly selected 10 teacher training institutions. A tool developed and standardized by Rajasekar and Raja was used. According to the study's findings, there was a greater variation in personal failure dimension

between science and arts stream teachers. There was a substantial difference in computer fear between science and arts stream prospective teachers, there existed no considerable variation within science and commerce stream prospective educators. There was no statistically significant variation in the level of computer fear among prospective instructors from various streams (i.e. Art, Commerce and Science).

Aarya (2012) conducted a study on computer anxiety among primary and secondary school teachers in relation to academic stream and locus of control on a sample of 800 primary and secondary school teachers (400 each) of district Muktsar of Punjab, by using Computer Anxiety Scale by Roslani Embi (2007) and Locus of Control Scale by Hasnain and Joshi (1992). The objectives of the study were to study computer anxiety of primary and secondary school teachers and to study computer anxiety of primary and secondary school teachers with different academic streams. Results of the study indicated that primary and secondary school teachers exhibited equal scores of computer anxiety and primary and secondary school teachers did not exhibited any difference in academic streams.

Selvaganpathi and Raja (2012) conducted a study entitled, "Technophobia of Higher Secondary School Teachers" on a sample of 300 teachers working in the higher secondary schools situated in the Kumbakonam Taluk, Thanjavur district of Tamilnadu, by using Technophobia Scale (2007) by Prabhakaran. The objectives of the study were to find the level of technophobia of the higher secondary teachers and to study gender-wise difference of technophobia among higher secondary teachers. Results of the study indicated that in respect of the entire sample of teachers, 100% of them had low level of technophobia and none of them had a high level of technophobia and there was no significant difference in technophobia between the male and female teachers.

Veena (2012) studied teachers' attitude towards information technology and found that:

- Senior secondary school teachers teaching in government and private institutions having different levels of teaching experience possessed more or less the same attitude towards information technology with respect to impact of IT.
- Male and female senior secondary school teachers differed significantly from each other with respect to their attitude towards information technology in 1st area i.e. impact of information technology. The mean scores of female senior secondary school teachers in impact of information technology area (27.33) was significantly less than their male counterparts (28.21).
- Level of teaching experience and gender did not interact significantly with regard to their combined influence on attitude of senior secondary school information technology.
- Senior secondary school teachers teaching in government and private institutions having different level of experience possessed more or less the same kind of attitude with regard to usefulness of IT for students.
- There was no significant gender-wise difference in attitude of senior secondary school teachers towards information technology with regard to usefulness for students.

Kannan and Chandrasekaran (2012) conducted a study to find computer anxiety of the higher secondary school students. Descriptive survey study was conducted on sample of 370 students studying in seven higher secondary schools in Madurai. A tool developed and standardized by Kannan and Muthumanickam (2010) was used. The results of the study concluded that there was a significant difference between arts and science group of the higher secondary students in their

computer anxiety. Further, it was noted that arts group students were having more computer anxiety than the science group student.

Aziz and Hassan (2012) conducted a study to measure the computer anxiety in the higher secondary students along the exploration of the factors which can affect the anxiety. 1068 higher secondary students were administrated a computer anxiety scale. Findings showed that gender, grade, personal computer, previous knowledge, teachers' qualification and physical facilities at colleges affected the computer anxiety of the students. It was recommended that hand on experience, well qualified teachers and personal computers should be provided to the students at higher secondary level. The overall results indicated that the students' computer anxiety was significantly affected by the teachers who were Science graduates and having diploma in computer studies and computer graduates.

Sharma and Singh (2013) investigated the attitude towards computer education of senior secondary school students in relation to gender, locality and academic stream. Descriptive survey method was used. The sample was comprised of 200 senior secondary school students from District Rohtak of Haryana. The investigator adapted the Attitude towards Computer Education scale by Jahanur Ali (2001) for data collection. Findings of the study showed that there was no significant gender difference on the attitude towards computer education among senior secondary school students. It showed that boys and girls had same perception about the computer education. The study revealed that there was no significant locality difference on the attitude towards computer education among senior secondary school students. Further, it also revealed that locality (rural and urban) did not have any effect on the attitude towards. The study also indicated that there was no significant academic stream difference on the attitude towards computer education among senior secondary school students.

Kanchan (2013) in her study on computer phobia among primary school teachers in relation to their gender, teaching experience and educational qualifications conducted on a sample of 153 primary school teachers selected from Ghumarwin-II, Jhandutta and Sadar educational blocks of district Bilaspur of Himachal Pradesh found that:

- There was significant difference in mean computer phobia scores of male and female primary school teachers. Male primary school teachers had significantly less level of computer phobia than their female counterparts.
- Primary school teachers having different levels of teaching experience differed significantly with respect to their computer phobia.
- There was significant difference in the mean computer phobia scores of primary school teachers having very high and high teaching experience. Primary school teachers having high teaching experience possessed significantly low level of computer phobia than teachers with very high teaching experience.
- There was significant difference in the mean computer phobia scores of primary school teachers having very high and average teaching experience. Primary school teachers having very high teaching experience possessed significantly low level of computer phobia than teachers with average high teaching experience.
- There was significant difference in the mean computer phobia scores of primary school teachers having high and average teaching experience. Primary school teachers having high teaching experience possessed significantly lower level of computer phobia than teachers with average high teaching experience.
- There was significant difference in the mean computer phobia scores of primary school teachers having low and average teaching experience. Primary school teachers having low teaching experience

possessed significantly lower level of computer phobia than teachers with average high teaching experience.

Padmavathi (2013) studied secondary school teachers' perceptions, competency and use of computers. This study was conducted on a sample of 134 senior secondary school teachers of union territory of Pondicherry, by using Self-administered Questionnaire. The objective of the study was to access gender, age, teaching subject, and training in computers having influence on teachers' perceived usefulness and actual use of computer. The results of the study pointed out that age, gender and teaching subject did not show significant difference in teachers' perception on use of computers.

Kuldeep and Kaur (2014) conducted a study on technophobia of teachers towards web-based teaching and experience learning. This study was examined on a sample of 100 teachers of Delhi by using Computer Attitude Scale by Dr. Tahira Khatoon (Aligarh) and Manika Sharma (Aligarh). The objectives of the study were to study the technophobia of teachers handling high school and higher secondary class towards web-based teaching and experience learning and to study the difference in the technophobia of teachers who had used web-based technology in the classrooms and those who had not used web-based even once in their teaching. The study revealed that teachers of senior secondary classes were more technophobic in comparison to teachers of secondary classes towards web- based teaching and experience.

Saxena et al. (2014) investigated a study of computer phobia among prospective teachers. The study compared the level of computer phobia among male and female potential instructors based on different streams, which were Humanities and Science. This survey was descriptive in nature. A sample of 97 prospective teachers was gathered, with 76 male instructors and 21 female teachers. The study employed

the approach of purposive sampling. The computer phobia scale established by Saxena (2010) was utilized to analyse the data. Female prospective instructors were shown to have more computer anxiety than male prospective teachers. Rural prospective teachers had more computer anxiety than urban 22 prospective teachers, and humanities prospective teachers had more computer phobia than science prospective instructors.

Qasim, Huri, and Ashish (2014) studied the computer phobia in teachers of I.C.S.E., U.P. and C.B.S.E boards. The study determined the level of phobia associated with usage of computer among teachers of higher secondary school from various boards in Allahabad. A descriptive survey was employed throughout the study. The sample consisted of 225 educators who taught in higher secondary schools managed by several boards. The sample was chosen using a stratified random sampling technique. A standardized tool developed by Dr Rajasekar and Raja was employed for data collection. Average with its standard deviation, t-test, and ANOVA based tests were utilized as statistical techniques for data analysis. The study's findings showed existence of substantial variations within level of phobia associated with computer usage between educators of Higher Secondary School of I.C.S.E. and U.P. Board and those of C.B.S.E. and U.P. Board. However, the study also revealed absence of any notable variation within level of computer phobia between educators of Higher Secondary Schools from C.B.S.E. and I.C.S.E Board.

Minakshi (2014) attempted a study on computer phobia among senior secondary school teachers in relation to certain selected variables. This study was conducted on a sample of 174 senior secondary school teachers of district Mandi of Himachal Pradesh by using Computer Phobia Scale (2006) by Dr. Rajasekar S. and Dr. P. Vaiyapuri Raja. The objectives of study were to study gender, stream and age-wise difference

in computer phobia among senior secondary school teachers. The results of the study concluded that male senior secondary teachers had slightly higher mean computer phobia score than their female counterparts and senior secondary school teachers teaching in different streams had more or less the same level of computer phobia. Senior secondary school teachers having different age possessed more or less the same level of computer phobia.

Mona (2014a) discovered secondary school teachers' aversion to computer use. A sample of 30 teachers was collected from secondary schools using a simple random technique. Total 10 schools out of which 30 teachers took part in the survey including 15 males and 15 female teachers between the age group of 25 to 50 years. The sample consisted of in-service teachers of government schools. The researcher used computer phobia scale 2010 by Dr. S Rajasekar and Dr. P. Vaiyapuri. They observed that majority of educators had a moderately low level of computer phobia. Only 22% of the sample thought that they encounter no issues comprehending the technicalities related to computers, and 39% agreed that they favourably accomplish various computer aided work daily. The majority of teachers were enthusiastic about using computers for personal purposes. More over 60% of teachers stated that they not only enjoy working with computers, but they also feel confident doing so. Some factors where teachers received negative scores lead to the conclusion that many teachers were skeptical of the use of computers in educational practice. Furthermore, it was discovered that teaching experience and gender were substantially connected with instructors' beliefs and perceptions of computer use.

Mona (2014) explored the importance of computer education in present time, a descriptive study was done. The investigator used the Computer Phobia Scale (2010) by Rajasekar and Vaiyapuri which

measured the Personal Failure, Human vs. Machine Ambiguity and convenience of teacher. Data was collected from Chandigarh, Panchkula and Mohali school teachers. The sample was comprised of in-service teachers of Govt. schools of tricity. A total of 50 questionnaires were distributed. A total of 10 school and 30 teachers took part in the survey, including 15 male and 15 female teachers. The result was statistically analyzed by using mean, S.D and t-value, there were three level i.e. high, average and low level of computer phobia. The result indicated that most of the teacher possessed moderately low level of computer phobia.

Kant (2015) conducted a study on computer phobia among senior secondary school teachers teaching in tribal region of Himachal Pradesh in relation to their gender, teaching subjects and level of teaching experience. The major findings of the study were:

- A large number of senior secondary school teachers (80.10 %) teaching in tribal region of Himachal Pradesh possessed neutral computer phobia. Only 17.10% teachers teaching in tribal region of Himachal Pradesh possessed low level of computer phobia.
- There was significant difference in the mean scores of Human vs. Machine Ambiguity component of computer phobia of male and female senior secondary school teachers teaching in tribal region of Himachal Pradesh. Male senior secondary school teachers teaching in tribal region of Himachal Pradesh had significantly less computer phobia with respect to Human vs Machine Ambiguity than their female counterparts.
- There was significant difference in the mean scores of overall computer phobia of male and female senior secondary school teachers teaching in tribal region of Himachal Pradesh.

Williams (2015) investigated computer technology use. The study addressed the dearth of research about k-12 teachers' attitudes toward

computer technology in the classroom. The study looked at instructor variables that could influence the computer usage within classroom environment. The study's goal was to investigate the attitudes of k-12 teachers in northeast Mississippi schools toward employing the computer technology in their classrooms. The aim was to assess the influence of characteristics such as computer experience, home computer access, age, gender, teaching level, teaching field, and education level on teachers' attitudes about computers. A sample size constituted 179 teachers and Computer Attitude Scale, which consists of two sections: section 1 demographic information and section 2 (with 40 items) was used for data collection. According to the study's findings, instructors had a generally good view toward computers. Furthermore, around 93.3 percent of respondents had access to a computer at home, and 83.3 percent of teachers had one extra year of computer expertise. According to the findings, gender was not a predictor of teachers' attitudes toward computers. Age was also not a predictor of teachers' attitudes toward computers, as this study discovered a small percentage of old teachers and a significant number of young teachers, which corresponds to Becker's 1999 study that young teachers felt comfortable with technology because they grew up with computers.

Dhawan and Sharma (2015) studied the technophobic attitude of students studying at senior secondary schools of Yamunanagar district of Haryana. The normative survey method and cross-sectional approach were employed by the researchers. The students studying in senior secondary schools of Yamunanager district of Haryana constitute the population. Depending upon the nature and objectives of the study, multiple sampling strategies had been employed. The sample consisted of 300 subjects, where the variables like gender, discipline and residing area were solicited. The study inferred that there existed an influence of stream of education and residing areas on technophobic attitude of the

students of senior secondary school. It was found that students of literary stream were more technophobic. It may be due to the nature of the disciplines. Science students were experienced to handle equipment and also familiar with technology.

Erica, Karl and Anthony (2015) investigated factors involved in compulsive internet use, with specific focus on the relation between social connectedness, the trait introversion, and compulsive internet use. Sample of Australian university students (N=168) participated in an online survey. Standardized scales were used to measure social connectedness, introversion, and compulsive internet use. Results showed that introverted adults reported more compulsive internet use symptoms than extroverts. In addition, introversion partially mediated the relation between compulsive internet use and social connectedness.

Saini et al. (2016) determined relationship of internet addictive behavior with personality characteristics among medical students. A cross-sectional observational study was carried out on 140 medical students taken randomly. Assessment of socio-demographic details was done with the help of semi structured proforma, and internet addiction test and big five inventory were used to assess internet addictive behavior and personality traits. For comparison of dichotomous variables, Chi-square test was used. Correlation and linear regression were applied to see association. Data analysis was done with the help of statistical software SPSS 23. 0. Mean score of internet addiction scale among medical students was 33.94 (standard deviation 13.592). It was found that higher neuroticism (β =0.242, P=0.004) and less extroversion (β= −0.210, P=0.011) displayed significant associations with internet addictive behavior. The results showed that neurotic individuals tend to experience increased levels of stress and interpersonal conflict because of this personality trait. Internet addictive behavior was lower on

extroversion traits because they are more in social activities, making friend easily, and cheerful. Whereas introvert individuals failed to cope with emotional and physical stress effectively, had difficulty making friends and establishing social relationships, and thus were relatively more susceptible to addiction. It seems that introverts transferred their pattern of introverted behavior from the offline into the online world.

Prakash (2016) studied the level of computer phobia among male and female teachers at senior secondary private and government schools, among urban and rural school teachers. The study focused on determining the amount of computer phobia among teachers from senior secondary schools including both the government and private sector schools, as well as among teachers teaching in various fields. The sample consisted of 100 instructors who were chosen using the purposive sampling technique. As a tool, the computer phobia scale developed by Dr. S. Rajasekar and Dr. P. Vaiyapuri Raja was used. T-test was employed by the researcher to evaluate the level of significance within the observed difference. The findings of the study showed that female instructors had a higher level of computer phobia than male teachers. Teachers in private schools were more computer phobic than teachers in public schools. Further, Urban teachers possessed more for computer phobia in comparison to rural teachers towards computer phobia in District Solan of Himachal Pradesh.

Vehbi (2016) determined the strata of computer phobia among pre-service teachers in relation to their gender and computer experience. This was a descriptive study with a quantitative component and a relational component. A sample of 829 participants (407 females and 422 men) ranging in age from 18 to 24 years old was chosen. To assess pre-service teachers' computer fear, a Likert type multiple choice self-report tool was designed. The Z value was computed, and computer levels were

categorised accordingly. An analysis of variance was used to see how the estimated phobia level changes in relation to independent variables such as gender, computer ownership, topic area, and evaluation of previous computer education experience. The study's findings showed that females had much more computer phobia than males, that teacher candidates who used computers more frequently had lower computer phobia, and that participants who had poor computer training had higher computer anxiety. Males had substantially less computer phobia than females, accordingly. The key finding of mentioned study was that approximately 3% of participants exhibited a psychopathological sensitivity to computers that requires immediate attention. Because these participants had a high level of fear and anxiety about computers, they were likely to engage in angry and violent behaviour and avoid using computers and seeking technical support.

Chandini (2016) examined the attitude of secondary school teachers towards the use of computer in education. The descriptive survey method was employed. The population consisted of all the secondary school teachers of Puttur Taluk. The sample of the study consisted of 50 secondary school teachers of below 40 and above 40 years of age. A 5 point Likert scale developed by Albirini (2006) was used with some modification to measure the teacher's attitude towards the use of computer in education. The result of this study showed that there was significant difference in secondary school teacher's attitude towards the use of computers in education with respect to their age. The study also revealed that a substantial difference existed within attitudes of teachers from secondary school under and over 40 years old concerning the use of computers in teaching. Teachers under the age of 40 had a more optimistic attitude than teachers beyond the age of 40. The findings have implications for the teachers to equip themselves through computers literacy trainings. Government has to provide infrastructure facilities for

use of computers in classrooms. Thus the attitude of secondary school teachers towards the use of computers in education can be improved.

Yunus et al. (2016) investigated the level of computer phobia among adult undergraduates at a Malaysian public university. It investigated if the level of computer phobia experienced by adult university students differs by gender. This was a survey that was descriptive in nature. A sample of 106 adult undergraduates was chosen for the study using the purposive sampling technique. To collect data, a computer rating scale (CARS), a measuring technophobia instrument (MTI), and 65 Likert scale questions from Rosen and Weil were employed. A computer self-efficacy scale and an online attitude scale were also used. The data was analysed using the SPSS software. According to the study's findings, female students had a higher level of computer phobia than male students. Female students exhibited feelings of fear and dread around computers. Female respondents' attitudes were found to be more unfavourable than male respondents. The purpose of this research was to look into the usage of ICT for teaching purposes in elementary school. This study investigated teachers' use of technology within classroom, specifically "the ICT they use optical they feel the way there is a lot of impediments." For the purposes of this study, 24 public elementary schools were chosen, and 101 teachers took part in the survey (57 percent females and 43 percent) For the purposes of this study, teaching experience ranged from 7 to 23 years, with an average of 14 years. Data collection interviews with instructors were scheduled and audio recorders were used. An online database was built to transcribe, store, and encode interviews. The study's findings showed that teachers almost totally employ ICT in the classroom. Presentation technologies were limited. It also demonstrated that teachers did not communicate in any way. Technologies teachers primarily obtain ICT content from websites and utilize it for lecturing. A small number of teachers served as

motivators and felicity addresses for students who use ICT, but the majority of them were used with students as the audience.

Dhaka (2017) conducted a study to analyze computer phobia among secondary school teachers with respect to their gender, locality and type of school management. Descriptive Survey Method was used for the present study. The population constituted of all the secondary school teachers of West Delhi and the sample consisted of 100 secondary school teachers. Computer Phobia Scale developed and standardized by S. Rajasekar and P. Vaiyapuri Raja (2014) was used for the collection of data. The statistical techniques Mean, Standard Deviation and t-test were used for the analysis and interpretation of the data. The findings of the study showed that the secondary school teachers showed signs of computer phobia. Out of the total sample surveyed for the present study, the female secondary school teachers possessed more computer phobia than male secondary school teachers. The findings also revealed that urban secondary school teachers had more computer phobia than rural secondary school teachers. It was also concluded that private secondary school teachers showed more computer phobia than government secondary school teachers. There was found significant difference among secondary school teachers with respect to their gender, locality and type of school management on their computer phobia. In the light of the findings of the study, its educational implication lies in the fact that more emphasis should be given to the computer training and its practical knowledge in the pre-service teacher education programme as well as to the in-service teacher education programme.

Reena and Sood (2017) focused on computer anxiety among prospective secondary school teachers with respect to gender and academic stream. For conducting this study, a sample of 928 prospective secondary school teachers from 38 B.Ed. colleges was selected by

adopting stratified random sampling technique. Data were collected from prospective secondary school teachers with the help of Computer Phobia Scale by Dr. S. Rajashekar and Raja (2010). Mean, S.D. and t-test were used for analyzing the data. The findings of the study revealed that male prospective secondary school teachers possessed significantly more computer anxiety as compared to female prospective secondary school teachers. Similarly, prospective secondary school teachers of arts stream possessed significantly more computer anxiety as compared to prospective secondary school teachers of science stream

Sharma and Pathak (2017) examined that difference in computer phobia among high school secondary teachers based on their gender and board. The technique of descriptive survey was used for the study. The sampling method of stratified random sampling was employed and the sample contained 117 persons having candidature ship of male and female teachers from various board higher secondary schools. As a tool, the scale for measuring phobia associated with computer usage was developed and standardized by Dr. S. Rajasekar and Dr. Vaiyapuri Raja (2005). For analysis for data and interpretation of results 16 F' test were the statistical used. The findings of the study revealed that gender and board played a major influence in computer fear. Further, male instructors of the CBSE and UP boards had lower levels of computer phobia as compared to female teachers of the respective boards.

Mittal and Kaur (2018) examined that study of computer phobia among secondary school teachers. In this study, the descriptive research method was employed. A total sample consisted of 400 secondary school teachers from Hisar, Jind, and Fatehabad districts of Haryana. The sample was selected using purposive sampling technique. The data were collected with the help of Computer Phobia Scale established by Rajashekar and Raja (2010). The results showed that the majority of

instructors reported neutral computer fear, only few teachers were reported higher level of computer phobia. Furthermore, there were a substantial difference in computer fear among instructors based on gender and stream, but no substantial variation in phobia associated with computer was observed in various hypothesized group of teachers based on their qualification.

Awofala et al. (2019) explored the inclination toward operating computers, anxiety associated with computer usage and the gender-based dependency in efficiently using computers within 2100 teachers of science, technology, and mathematics (STM) core from the University of Lagos, Nigeria by employing quantitative research methodologies during the description-based survey model. Quantification of data in terms of percentage, average with standard deviation were cardinal feature of descriptive statistics whereas Pearson -test and multiple regression analysis usually were considered to be specific attributes of inferential statistics. According to the data, there existed substantial interdependence in between phobia associated with computer usage, its associated anxiety and gender-based efficiency of computer operations. With regards to the concerned population, inclination towards computers, efficiency in its usage with related phobia gender difference was considerably significant. Owing to the affective data, hypothesized control with its relevance, behavioral similarities, phobia associated with computer usage and gender, variance within the selected group of teachers in regards to efficiency of computer usage was considerably significant. Report presented herewith was indicative of cautious emphasis of institutions illustrated towards phobia associated towards computer thereby resulting in elucidation of desired techniques to curtail it. Pre-service STM educators will be able to create enjoyable e-learning experiences as a result of this.

Suvera and Tailor (2020) conducted a study entitled, "Computer phobia: A comparative study of male and female B.Ed trainees." This research examined the differences in computer phobia among B.Ed trainees in Navasari district of Gujarat with reference to their gender, stream and locality (rural and urban), This study was conducted on a sample of 360 B.Ed. students. Data was collected using the Computer Phobia Scale established by Rajashekar and V. Raja. For data analysis statistical tools t-test, average with standard deviation were employed. Findings of this study revealed the significant difference among male and female B.Ed trainees. Further, there was a significant difference in computer phobia among trainees of different teaching streams i.e., science, arts and commerce.

Raju and Reddi (2022) attempted to know the perceptions of teachers towards the use of technology in their classroom teaching, to know the causes for their technophobia and suggest measures to overcome this problem. The researchers used a well prepared and standardized questionnaire for data collection. Total sample of 240 teachers (40 Headmasters and 200 School Assistants) selected from 40 secondary schools located in Vizianagaram District of Andhra Pradesh. Stratified random sampling technique was employed. Mean score values, standard deviations and independent t-tests were used for analysis of data. The findings of the study revealed that the demographic variables like; gender, age and teaching experience had no influence on the technophobia of teachers working in secondary schools. However, the high mean score values of teachers in rural schools revealed that higher levels of technophobia on the part of the rural teachers as compared to their counterparts working in urban schools. The study suggested that the teachers working in secondary schools should get rid of technophobia and use ICT tools effectively in classroom teaching for the benefit of their students.

Behera (2023) examined that the attitude of secondary school teachers towards the use of information and communication technology in education. For this, the investigator had used descriptive survey method. One hundred samples (57 female and 43 male) were selected by using stratified purposive sampling. For the collection of data, the researcher had prepared a scale. To derive the results from the data the investigator had used simple percentage, mean, standard deviation, and t-test. The findings of the study revealed that the researcher had found that 3% teachers have highly favorable, 21% favorable, 39% neutral, 17% unfavorable, and 20% highly unfavorable attitude towards the use of ICT in education. The study also showed that there was significant difference between male and female teachers' attitude towards the use of ICT in education. On the other hand, there was no significant difference between rural and urban teachers' attitude towards the use of ICT in education.

2.2 HYPOTHESES OF THE STUDY

In the present study, following hypotheses were formulated:

1. There will be no significant gender-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

2. There will be no significant marital status-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

3. There will be no significant stream-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

4. There will be no significant locality-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

5. There will be no significant school-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

Chapter III

Method and Procedure

CHAPTER-III

METHOD AND PROCEDURE

After the selection of problem and formulation of hypothesis the next step is what kind of method and procedure is adopted for the study. For good and appropriate results, the investigator requires systematic and accurate procedure. Methodology is the procedure of the research technique. It is the logic of scientific investigation. It translates the principles of a paradigm research language and shows how the society can be explained and studied. It plays an important role in any study. Literally, 'Methodology' means the science of methods. It contains the standards and principles to guide the choice, structure, proven and use of method. Thus, methodology is not concerned with building knowledge but deals with the procedures, conceptual, logical and research by which knowledge is build. The technique or procedure adopted is helpful in determining the reliability, validity and norms of the research study. For this purpose, right type of methodology is used. This methodology is helpful in solving the problem in a systematic way. Method is a tool or an instrument employed to gather empirical evidence and to analysis data. It is building of scientific knowledge in the method, observation, experimentation, generalization and verification method. They are not used for determining the type of methodology without considering process and type of analysis and other factors.

Research method is most important in a research process. It describes various steps of the plan of attack to be adopted in solving a research problem. Research simply means a search for factual answers to questions and solutions to problems. It is an "organized inquiry". Keeping in view the objectives of the study following methodology was adopted.

1. Research Method Used
2. Research Approach Followed
3. Variables of the Study
4. Population and Sampling
5. Research Tools Used
6. Research Design
7. Data Collection
8. Scoring Procedure Followed
9. Analysis of Data

3.1 RESEARCH METHOD USED

To carry out any type of research, the researcher must gather data with which to test the hypotheses or answers to the questions. Many different methods and procedures have been developed to aid in the acquisition of data.

Descriptive survey method is designed to obtain pertinent and precise information concerning the current status of phenomena and whenever possible to draw valid general conclusion from the facts discovered. Descriptive research involves events that present condition. It aims to describe "what exists" with respect to variables or conditions in a situation. Descriptive research method is most popular and widely used research method in education. Due to its popularity, importance and directness, the researcher can gather information in terms of individual opinion about some issues by simple questionnaire. The researcher in the present study has used the descriptive method as a research method.

3.2 RESEARCH APPROACH FOLLOWED

There are two main approaches for scientific study of any phenomenon or problem in hand. The adoption of a particular research approach depends upon the kinds of data gathered. As the data in the present study were collected by administering

questionnaire and scale etc. it was considered worthwhile to employ both qualitative as well as quantitative research approaches for realizing the study objectives.

Qualitative research is, "the systematic collection, organization, and interpretation of textual material derived from talk or conversation. It is used in the exploration of meanings of social phenomena as experienced by individuals themselves, in their natural context". It refers to any social science study that produces results which are not obtained by statistical procedures or other methods of quantification.

Apart from this, quantitative research approach was also employed in the present investigation to achieve study objectives. Quantitative research is the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect. This approach uses 'measurement' as most precise and universally accepted method for assigning quantitative values to the characteristics or properties of objects or events for the purpose of discovering relationships between variables under study. Thus, quantitative research approach was also employed in the present study.

Finally, it may be summed up that in order to realize the objectives of present study; both qualitative and quantitative research approaches were employed. In addition, qualitative and quantitative data obtained from respondents through different research tools.

3.3 VARIABLES OF THE STUDY

Variables are the conditions or characteristics that the researcher manipulates, controls or observes. The independent variables are the conditions or characteristics that the researcher manipulates or controls in his/her attempt to ascertain their relationship to observed phenomena. The dependent variables are the

conditions or characteristics that appear, disappear or change as the researcher introduces, removes or changes the magnitude of independent variables.

In the present investigation, following variables were taken as independent variables:

(i) Gender

(ii) Marital status

(iii) Stream

(iv) Locality

(v) School Type

Gender variable was considered of having two types i.e. male and female, variable marital status (married and unmarried), variable stream (arts and science), variable locality (rural and urban) and school type (govt. and private) etc.

3.4 POPULATION AND SAMPLING

The primary purpose of research is to discover principles that have universal application but to study the entire population to arrive at generalizations would be impractical, if not impossible. Researchers rarely survey the entire population for two reasons: the cost is too higher and the population is dynamic in that the individual making up the population may change over time. Sampling is done to overcome this difficulty. Sampling is the process of selecting a number of individuals from a population preferably in such a way that the individual selected represent the larger group from which they were selected. The sample drawn out of the population should be true representative of the population otherwise; the results of study may turn to be futile. Most of the educational phenomena consist of a large number of units. It would be impractical, if not impossible; to test, to interview or observe each unit of the population under controlled conditions in order to arrive at principles having universal validity.

Some populations are so large that their study would be expansive in terms of time, money, efforts and manpower. Sampling is one of the most important and indispensable factor of every research study. Sampling is a process by which relatively small number of individuals, objects or events is selected and analyzed in order to find out something about the target population from which the representative sample was selected. Sampling has been increasingly used in educational research for answering certain questions about a specific population. The sample drawn out of population should be true representative of the population otherwise; the results of the study may turn to be futile.

In the present investigation, the sampling was carried out in different phases. The present research study was delimited to two districts of Himachal Pradesh i.e. Kullu and Mandi. An effort has been made by the investigator to select an adequate and representative sample of senior secondary school teachers from these two districts of Himachal Pradesh. The details of sampling procedures employed in this study are given as under:

Phase I: Selection of Districts

At the first stage, the selection of districts was made. For taking the decision regarding number of districts to be selected from the targeted population, lottery method was employed. On applying this method, two districts i.e. Kullu and Mandi from Himachal Pradesh were included in the sample of present investigation.

Phase II: Selection of Educational Blocks

At the second stage, the lists of educational blocks of two selected districts were procured and a total of 4 educational blocks each 2 educational blocks (from each two selected districts) were selected by employing random sampling technique. The selection of a

particular number of educational blocks from each single district was made by employing lottery method. After making the decision regarding number of educational blocks from each particular district, the lottery method was again employed to identify the names of educational blocks to be included in the sample of the study.

Phase III: Selection of Senior Secondary Schools

At the third stage, the selection of schools from sampled educational blocks of two districts was made by adopting convenient sampling technique. The schools which were easily accessible, connected with transportable road facility in particular district were selected by the investigator for the purpose of data collection. Thus, a total of 26 schools were chosen in the present study.

Phase IV (Selection of Senior Secondary School Teachers)

In order to study the views and perception of senior secondary school teachers regarding various aspects of computer phobia, selection of senior secondary school teachers was made from two selected districts. The selection of teachers was made by employing incidental sampling technique and the teachers who were willing to provide the requisite information were taken into consideration in the present study. Initially, a total of 196 male teachers and 106 female teachers were selected. However, at the time of scrutiny of data, different research tools filled by 11 male teachers and 16 female teachers were found to be incomplete and hence, 185 male teachers and 190 female teachers constituted final sample of teachers for the present study. The district-wise, educational block-wise and school-wise distribution of teachers is given in Table 3.1.

TABLE 3.1

District-wise, Educational Block-wise and School-wise Sampling Distribution of Senior Secondary School Teachers

Sr. No.	Name of School	No. of Teachers		
		No. of Male	No. of Female	Total
Name of the District: Kullu				
Name of Educational Block: Anni				
1	Govt. SSS Girls Anni	7	11	18
2	Govt. SSS Chowai	10	8	18
3	Govt. SSS Namong	4	3	7
4	Govt. SSS Dalash	12	10	22
5	SVM Anni (Private)	5	7	12
6	Lourance Public School Chowai (Private)	3	8	11
7	Govt. SSS Boys Anni	5	5	10
Name of Educational Block: Kullu				
8	Govt. G SSS Kullu	12	13	25
9	Govt. B SSS Kullu	15	11	26
10	Govt. SSS Banjar	8	5	13
11	SVM Public School Kullu (Private)	4	9	13
12	LMS Kullu (Private)	3	5	8
Name of the District: Mandi				
Name of Educational Block: Janjehli				
13	Govt. SSS Janjehli	9	12	21
14	Govt. SSS Sanglwara	4	5	9
15	Govt. SSS Nihiri Sunha	10	5	15
16	Govt. SSS Thunag	5	3	8
17	Mother Choice School (Private)	11	9	20
18	Vidya Bharti Public School (Private)	4	8	12
Name of Educational Block: Balh				
19	Govt. G SSS Bangrotu	5	8	13
20	Govt. B SSS Bangrotu	10	12	22
21	Govt. SSS Bagla	9	10	19
22	Govt. SSS Kaniad	7	5	12
23	Govt. SSS Tawan	5	4	9
24	Genius International Public School (Private)	8	9	17
25	King Geroge Royal Public School Ner Chowk (Private)	6	2	8
26	Hilok Public Scool Ner Chowk (Private)	4	3	7
Total		185	190	375

3.5 RESEARCH TOOL USED

The selection of suitable tools is of vital importance for successful research. Keeping this in view, following research tool was considered most appropriate by the researcher for measuring the computer phobia among senior secondary school teachers:

3.5.1 Computer Phobia Scale by S. Rajasekar and P. Vaiyapuri Raja (2018)

Presently computer has become part and parcel of our life. Almost all our daily activities in one way or the other are associated with computers. Almost everyone is having a personal computer in their homes and only a minimum percentage of them are regularly using it. Many of them are rarely using computers due to a number of reasons and one such reason may be their fear towards using the computer. Even many of the teachers have this irrational fear towards computers. This irrational fear towards computer is known as "computer phobia". If a teacher is free from computer anxiety, then he can make use of computers during their teaching process without any inhibitions. For measuring computer phoia among senior secondary school teachers, 'Computer Phobia Scale' by S. Rajasekar and P. Vaiyapuri Raja (2018) was used. As per the authors of the scale, phobia is the feeling of unease, worrying and apprehension, which becomes a disorder when it disrupts the daily routine of the individual. On the other hand, phobia is an excessive fear of certain objects and situations. According to the authors of the scale, this scale can be used to measure anxiety as well as phobia towards various aspects of computer including its use. In order to develop this scale, the authors have collected variety of statements pertaining to computer phobia / anxiety from various sources like internet search, journals, books, experts in the field of computer education and educational psychology and also from teachers who are handling educational technology, computer education and educational

psychology as subjects in B. Ed. and M. Ed. courses in colleges and in universities. After having collected the statements from such sources, the authors have finalized 30 statements grouped under the following three dimensions viz.

- **Personal Failure-** Anxiety about present or future interactions with computers or computer-related technology.
- **Human vs. Machine Ambiguity-** Negative global attitudes about computers, their operations, or their societal impact.
- **Convenience-** Specific negative sentiments or self-critical dialogues design, actual computer interactions or when contemplating future computer interaction.

The dimension personal failure constitutes 12 statements; the dimension human vs. machine ambiguity constitutes 9 statements and the dimension convenience constitutes 9 statements. Thus, this scale consists of 30 statements of which 8 were positive statements and the remaining 22 were negative statements. Each statement is set against five-point scale of "Strongly Agree", "Agree", "Undecided", "Disagree", "Strongly Disagree" and weight of 4, 3, 2, 1 and 0 are given in that order for the positive statements and the scoring is reversed for the negative statements. An individual score is the sum of all the scores of the 30 items. The scores in this scale range from 0 to 120 in the direction of the high phobic or anxious to low phobic or anxious.

Try-out of the Scale

For the pilot study, the scale was administered to the sample of 160 teachers working in the higher secondary schools of Cuddalore district, Tamilnadu who were selected through cluster sampling technique. Then, their responses were scored carefully and based on the marks secured, all the papers were arranged in the descending order from the highest scorer to the lowest scorer. Then, they were subjected to item analysis. On the basis of item analysis, t-value for each statement was computed. The value of 't' is a measure of the

extent to which a given statement differentiates between high and low groups. If the 't' value is equal to or greater than 1.75, it indicates that the average response of the high and low groups to a statement differs significantly." As many as 29 statements having 't' value greater than or equal to 1.75 were chosen in order to form the final scale. This final scale was administered to 650 teachers working in higher secondary schools of Cuddalore district, Tamilnadu, chosen through cluster sampling technique. Based on the normal probability curve, the scores got from all the 650 teachers were categorized into five groups and based on this; the final scoring procedure was evolved.

Scoring Procedure

The scale has as many as 8 positive and 21 negative statements. An individual score is the sum of the scores of all 29 items. The description of nature of items and serial number of items in Computer Phobia Scale along with areas is given in Table 3.2.

TABLE 3.2

Area-wise Description of Nature of Items and Serial number of Items in Computer Phobia Scale

Sr. No.	Areas of Computer Phobia	Item No.	Nature of Items		Total Items
			Positive	Negative	
1.	Personal Failure	1,2,4,8,9,10,11, 12,13,14,15*,24	01	11	12
2.	Human Vs. Machine Ambiguity	16,17,18*,19*, 22,23,25,26	02	06	8
3.	Convenience	3*,5*,6*,7*,20, 21,27,28*,29	05	04	09
Total	**Three Areas**	**29 Items**	**08**	**21**	**29**

The score on final scale ranges from 0 to 116. Higher score indicates low computer phobia / anxiety and vice-versa. The norms for interpreting scores obtained on computer phobia scale are given in following Table:

Obtained Score	Interpretation
0-14	Very High Computer Phobia / Anxiety
15-36	High Computer Phobia / Anxiety
37-79	Neutral
80-101	Low Computer Phobia / Anxiety
102-116	Very Low Computer Phobia / Anxiety

Computer phobia scale has construct validity as items were selected having the 't' values equal to or more than 1.75 (Edwards, 1957). Its intrinsic validity was found to be 0.94 which clearly states that the scale is valid. The reliability of computer phobia scale was established by the split-half method (odd-even numbered) using Pearson product moment correlation. After applying Spearman- Brown prophecy formula, the reliability index was found to be 0.88 which is high and therefore the scale is reliable.

A specimen copy of Final Version of computer phobia scale for senior secondary school teachers is given as Appendix – I.

3.5.2 Questionnaire for Senior Secondary School Teachers

In order to seek the views of senior secondary school teachers regarding different aspects of computer phobia, a questionnaire was specifically developed. This questionnaire was structured in nature consisting of both closed-ended and open-ended questions. In the initial draft of the questionnaire, 14 items were framed. The items of the questionnaire were written in English language by taking into cognizance the nature of sample of senior secondary school teachers for whom this questionnaire was meant. There were a total of 9 items in the final form of questionnaire which dealt with seeking views of teachers regarding feel anxious when you try to learn technology related skills, being to use computer, become dependent upon them and feel insecure about to use of computer etc.

Validation of questionnaire for senior secondary school teachers

The validation of questionnaire for senior secondary school teachers was validated in terms of its content validity by seeking expert opinion and suggestions. For this, the items of the questionnaire were discussed with the teacher educators, researchers and faculty members of the School of Education, Abhilashi University, Chail Chowk Mandi. First of all, the purpose of the study was made clear to them and they were requested to critically evaluate each item of the questionnaire in terms of its clarity, accuracy, logic and relevance to the objectives of the study. The investigator personally discussed each item with experts and the comments and suggestions given by them were taken into consideration for giving a final shape to the questionnaire. In the light of their valuable comments and suggestions, certain items in the questionnaire were revised. Apart from this, the help of the language experts was also sought by the investigator to remove linguistic ambiguity in the items.

A specimen copy of Final Version of questionnaire for senior secondary school teachers is given as Appendix – II.

3.6 RESEARCH DESIGN

The design of present investigation included following three phases:

Phase 1

During the first phase, review of the theoretical and research literature related to computer phobia was carried out.

Phase 2

During the second phase, field survey was carried out by the investigator to collect requisite data for the present study. The details in this regard are given in next section of this Chapter.

Phase 3

The final phase of the research study was characterized with scoring of research tools, data organization and tabulation, its analysis and interpretation and report writing.

3.7 DATA COLLECTION

The investigator collected data personally during school hours. The tools were prepared beforehand and required numbers of Xerox copies were obtained. The investigator sought the co-operation of the principal of schools and teachers. Firstly, the researcher introduced her to the teachers and established rapport with them. The researcher distributed computer phobia scale to the senior secondary school teachers. The teachers were asked to put a tick mark (√) in the category which they think to be the most appropriate for each statement. For completion of the scale, about 15-20 minutes were taken by them. The filled copies of the scale were collected back from the senior secondary school teachers by the investigator.

At the next stage, data were collected again from the senior secondary school teachers by administering questionnaire specifically developed to seek their views regarding computer phobia among them. The filled questionnaire was collected from the teachers at its completion. The researcher thanked all the respondents and school authorities for their cooperation.

3. 8 SCORING PROCEDURE

Following scoring procedure was followed in respect of different research instruments in the present investigation:

- **Computer Phobia Scale**

  In this scale, each statement is set against five points ranging from "Strongly Agree", "Agree", "Undecided", "Disagree" to "Strongly Disagree" and weight of 4, 3, 2, 1 and 0 are given in that order for the positive statements and the scoring is completely reversed for the negative statements.

- **Questionnaire for Senior Secondary School Teachers**

  The frequency count and percentage analysis were used to classify the responses of senior secondary school teachers on each structured question. In case of responses on open-ended questions, the technique of 'content analyses were applied.

3.9 ANALYSIS OF DATA

For achieving the objectives of the present investigation, the data were analyzed by employing the following techniques: -

In case of quantitative data, the data obtained from senior secondary school teachers, descriptive statistics were computed. For comparing gender-wise, marital status-wise, stream-wise, locality-wise and school-wise significant differences, inferential statistical technique i.e. t-test was applied.

Similarly, the data obtained from teachers with the help of the questionnaire were analyzed by employing content analysis technique along with inductive and logical analysis. Frequency count and percentage analysis was applied in case of close-ended questions.

Chapter IV

Analysis and Interpretation of Data

CHAPTER-IV

ANALYSIS AND INTERPRETATION OF DATA

Data analysis and interpretation is the process of reviewing data and arriving at relevant conclusions using various analytical research methods. Data analysis assists researchers in categorizing, manipulating, and summarizing data to answer critical questions. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis. Data analysis is considered to be an important step and heart of the research work. After collection of data with the help of relevant tools and techniques, the next step is to analyze and interpret data with a view to arrive at the solution to the problem. The analysis of data means that the huge amount of data is converted into a meaningful unit and its interpretation means that what is the meaning and message conveying from this meaningful unit in context of the study. The term 'analysis' refers to the computation of certain measures along with searching for the pattern of relationship that exists among data groups. Interpretation means, "Adequate exposition of the true meaning of the material presented in terms of the purpose of study and of the chapter". Thus, the analysis and interpretation of data is important to draw out significant conclusions. Therefore, data analysis and interpretation is the process of assigning meaning to the collected information and determining the conclusions, significance and implications of the findings.

The present study was aimed at studying computer phobia among senior secondary school teachers as related to certain socio-personal and academic variables. The analysis of data in the present study was done by employing quantitative and qualitative approach by keeping in view the nature of the objectives of the study. The detailed analysis and interpretation of data is given as follows:

4.1 LEVEL OF COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS

The distribution of computer phobia scores among senior secondary school teachers along with the calculated values of various descriptive statistics is given in Table 4.1.

TABLE 4.1

Frequency Distribution and Descriptive Statistics related to Computer Phobia among Senior Secondary School Teachers

Computer Phobia Scores	Number of Senior Secondary School Teachers	Percentage	Cumulative Frequency	Cumulative Frequency Percentage
31-40	3	0.80	375	100.00
41-50	10	2.67	372	99.20
51-60	45	12.00	362	96.53
61-70	71	18.93	317	84.53
71-80	112	29.87	246	65.60
81-90	81	21.60	165	44.00
91-100	36	9.60	129	34.40
101-110	12	3.20	117	31.20
111-120	5	1.33	112	29.87
Total	**375**	**100.00**		

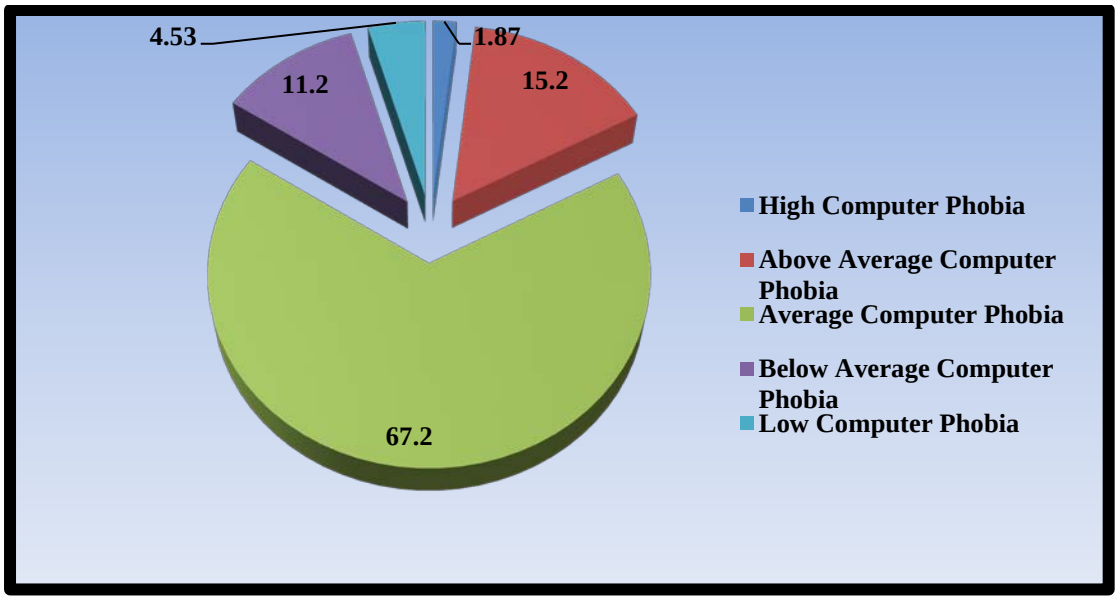
Descriptive Statistics	Values	Descriptive Statistics	Values
Range of Scores = 115-34=81		Total Number of Senior Secondary School Teachers=375	
Mean	75.64	Median	76.00
Mode	69	SD	13.857
Skewness	0.059	Standard Error of Skewness	0.126
Kurtosis	0.240	Standard Error of Kurtosis	0.251

The overview of raw data indicated that computer phobia scores of senior secondary school teachers varied from 115 to 34(out of maximum score of 116) showing a range of 81. The mean computer phobia score was found to be 75.64 (out of 116) with a

S.D. of 13.857. This indicated that senior secondary school teachers possessed average level of computer phobia. In order to further study the distribution of school teachers on the basis of computer phobia possessed by them, the sampled teachers were classified on the basis of their computer phobia scores by employing the procedure of M±1 S.D. On applying this procedure, it was observed that very less (4.53%) senior secondary school teachers possessed low computer phobia (scores from 102 to 115). Further, a few teachers (11.20%) had shown below waverage computer phobia (scores from 89 to 101). On the other hand, somewhat less than two third (67.20%) senior secondary school teachers reflected average level of computer phobia (score from 62 to 88) and few teachers (15.20%) had reflected above average level of computer phobia (score from 49 to 61). Almost negligible teachers (1.87%) possessed high computer phobia (score of 48 and below). The distribution curve representing computer phobia scores of senior secondary school teachers is shown in Figure 4.1.

FIGURE 4.1

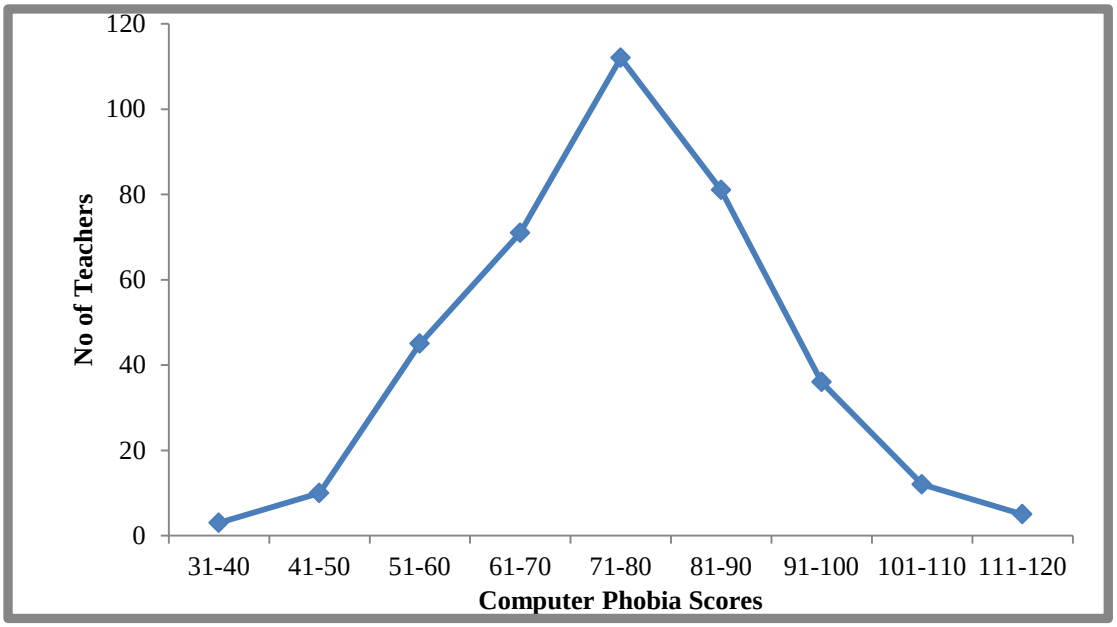
Pie-Chart Showing Percentage Distribution of Senior Secondary School Teachers according to their Computer Phobia Level



Apart from this, the obtained values of mean, median and mode of computer phobia scores of senior secondary school teachers came out to be 75.64, 76.00 and 69 respectively. The value of

skewness i.e. +0.059 showed some positive skewness in the distribution of computer phobia scores. The value of kurtosis was found to be -0.240 which indicates that the distribution of computer phobia scores was little bit leptokurtic in nature. Further, the values of standard error of skewness and kurtosis were found to be 0.126 and 0.251 respectively. Since, the value of skewness (+0.059) lies within the range of ±0.252 (2 times the value of standard error of skewness), the distribution of computer phobia scores is nearly normal in nature. Similarly, the value of kurtosis (-0.240) lies within the range of ±0.502 (2 times the value of standard error of kurtosis), the distribution of computer phobia scores is near to mesokurtic distribution. Hence, on the basis of this, it may be said that the distribution of computer phobia scores of senior secondary school teachers is nearly normal in nature and it approaches towards normal distribution curve. This is also evident from the values of mean (75.64), median (76.00) and mode (69) which are quite proximate to each other. The distribution of computer phobia scores of senior secondary school teachers is shown in Figure 4.2 which appears to be nearly normal**.**

FIGURE 4.2
Frequency Curve Showing Distribution of Computer Phobia Scores of Senior Secondary School Teachers



4.2 GENDER-WISE DIFFERENCE AMONG SENIOR SECONDARY SCHOOL TEACHERS IN TERMS OF OVERALL COMPUTER PHOBIA AND COMPONENTS OF COMPUTER PHOBIA

In order to study the difference in computer phobia (component-wise and overall) among senior secondary school teachers with respect to gender, the values of means, standard deviations, standard error of difference between means and t-values were calculated which are given in Table 4.2and are graphically represented in Figure 4.3.

TABLE4.2

't' Value Showing Significance of Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Gender

Sr. No.	Dimension	Male	Female	d_f	SE_D	t-value
1.	Personal failure	N= 185	N= 190	373	0.754	1.075 NS
		Mean=30.78	Mean=31.59			
		SD=7.089	SD=7.501			
2.	Human Vs. Machine Ambiguity	N= 185	N= 190	373	0.470	0.64NS
		Mean= 20.45	Mean=20.48			
		SD= 4.440	SD= 4.664			
3.	Convenience	N= 185	N= 190	373	0.515	1.046NS
		M= 23.72	M=24.26			
		SD=4.990	SD=4.981			
4.	Overall Computer Phobia	N= 185	N= 190	373	1.432	0.942NS
		M= 74.96	M= 76.31			
		SD= 13.382	SD=14.309			

NS: Not Significant

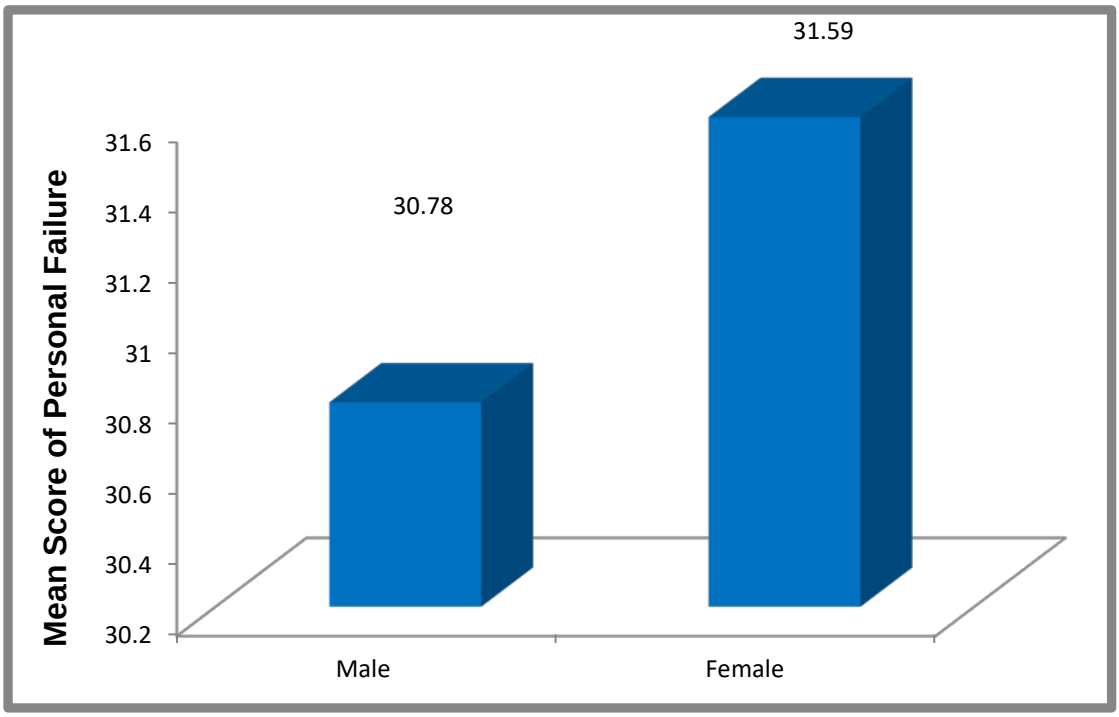
4.2 (i) Gender-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure

From Table 4.2, it may be depicted that the mean personal failure score of Male senior secondary school teachers was computed to be 30.78 with SD of 7.089. Similarly, the mean personal failure score of femalesenior secondary school teachers was found to be 31.59 with SD of 7.501. Further, the calculated value of 't' testing the significance of the mean difference was found to be 1.075which was not significant even at 0.05 level of significance, for d_f 373. Hence, the Hypothesis No. 1(i)that, "There exists no significant gender-wise difference in personal failure among senior secondary school teachers", was retained. So, it may be interpreted that the male and femalesenior secondary school teachers do not differ significantly with respect to their personal failure.

The gender-wise difference among senior secondary school teachers in terms of personal failure is shown in Figure 4.3.

FIGURE 4.3

Gender-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure

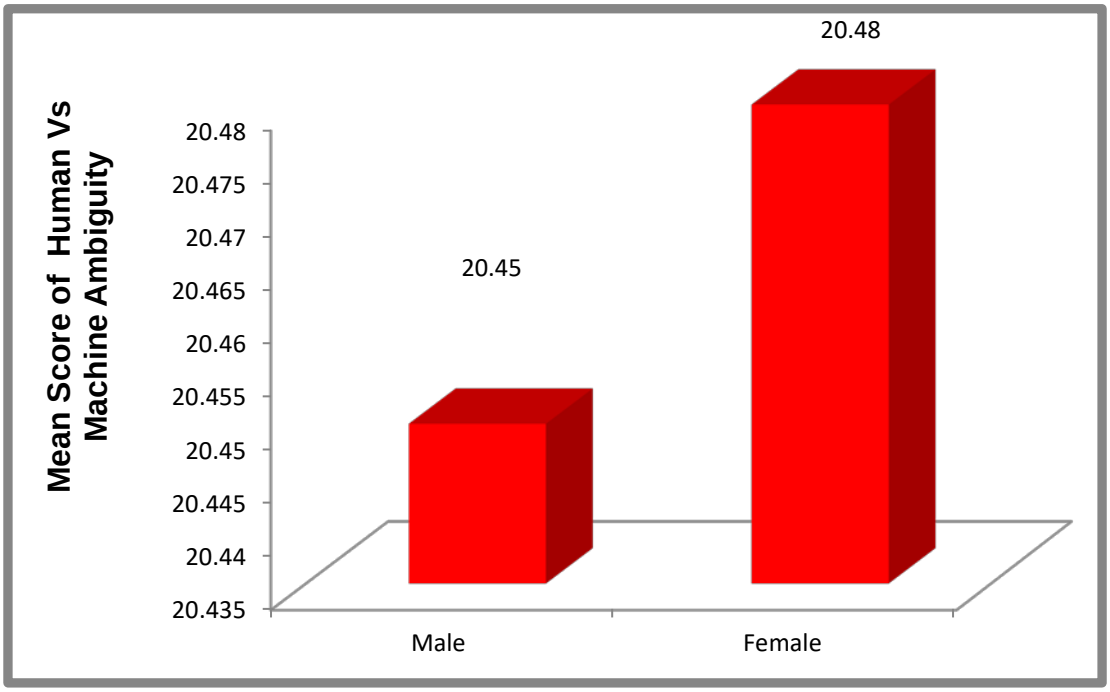


4.2 (ii) Gender-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity

Table further depicts that, mean human vs machine ambiguity score of male senior secondary school teachers was found to be 20.45 with SD of 4.440and the mean human vs machine ambiguity score of female senior secondary school teachers was computed to be 20.48 with SD of 4.664. Further, the calculated value of 't' testing the significance of the mean difference in human vs machine ambiguity was found to be 0.64 which was not significant even at 0.05 level of significance, for d_f 373. Hence, the Hypothesis No. 1(ii) that, "There exists no significant gender-wise difference in human vs machine ambiguity of senior secondary school teachers", was accepted. So, it may be interpreted that male and female senior secondary school teachers do not differ significantly with respect to human vs machine ambiguity. The gender-wise difference among senior secondary school teachers in terms of human vs machine ambiguity is shown in Figure 4.4.

FIGURE 4.4

Gender-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



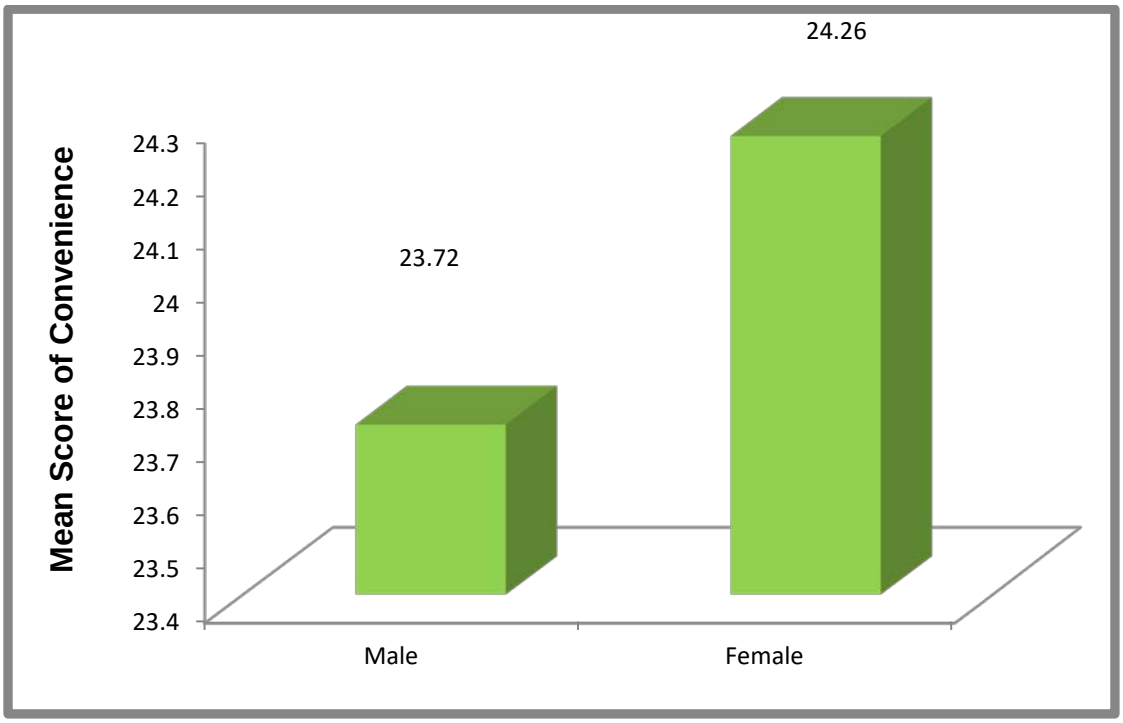
4.2 (iii) Gender-Wise Difference among Senior Secondary School Teachers in terms of Convenience

The mean convenience score of male senior secondary school teachers was computed to be 23.72 with SD of 4.990 and the mean score of female senior secondary school teachers was found to be 24.26 with SD of 4.981. Further, the calculated value of 't' testing the significance of the mean difference was found to be 1.046 which is not significant even at 0.05 level of significance, for d_f 373. Hence, the Hypothesis No. 1(iii) that, "There exists no significant gender-wise difference in convenience of senior secondary school teachers", was retained. So, it may be interpreted that male and female senior secondary school teachers do not differ significantly with respect to their convenience.

The gender-wise difference among senior secondary school teachers in terms of convenience is shown in Figure 4.5.

FIGURE 4.5

Gender-wise Difference among Senior Secondary School Teachers in Terms of Convenience



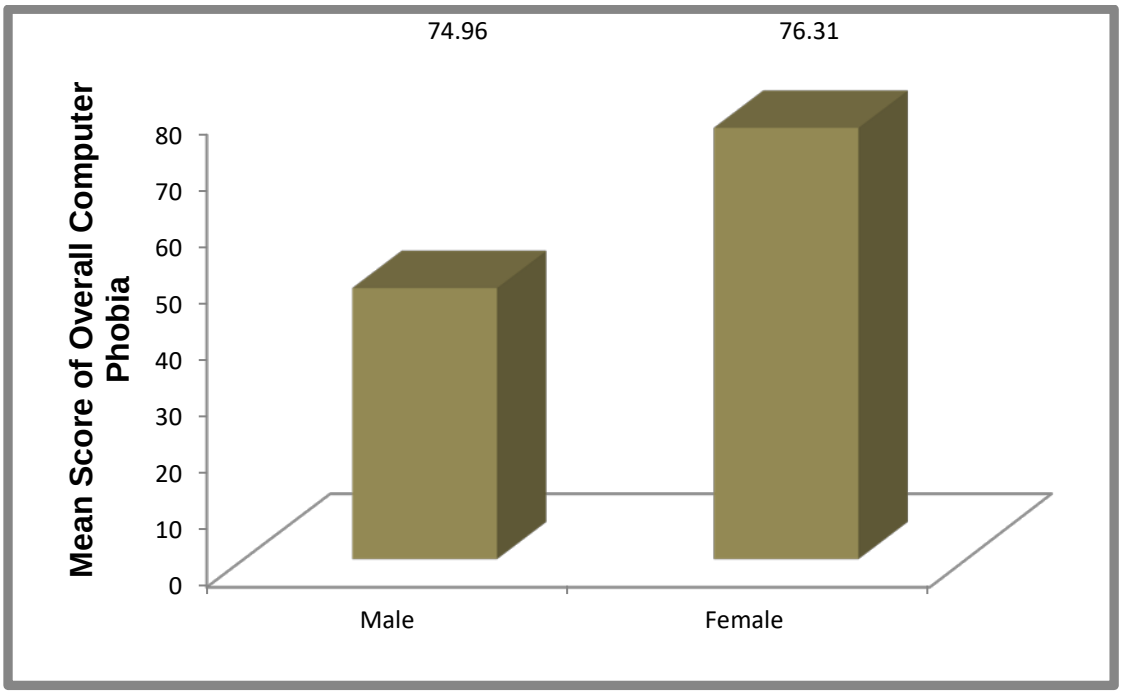
4.2 (iv) Gender-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia

It is clear from the Table 4.2 that the mean overall computer phobia score of male senior secondary school teachers was computed to be 74.96 with SD of 13.382. similarly, the mean overall computer phobia score of female senior secondary school teachers was found to be 76.31 with SD of 14.309. Further, the calculated t-value for mean difference in overall computer phobia scores of male and female was found to be 0.942which is not significant even at 0.05 level of significance, for d_f 373. Hence, the Hypothesis No. 1(iv) that, "There exists no significant gender-wise difference in overall computer phobia of senior secondary school teachers", was accepted. Hence, it may be interpreted that male and female senior secondary school teachers do not differ significantly with respect to their overall computer phobia.

The gender-wise difference among senior secondary school teachers in terms of overall computer phobia is shown in Figure 4.6.

FIGURE 4.6

Gender-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



4.3 MARITAL STATUS-WISE DIFFERENCE AMONG SENIOR SECONDARY SCHOOL TEACHERS IN TERMS OF COMPONENTS OF COMPUTER PHOBIA AND OVERALL COMPUTER PHOBIA

In order to know the effect of marital status on computer phobia (component-wise and overall) among senior secondary school teachers, the statistical technique of 't-test' was applied. The results obtained after applying t-value to ascertain marital status differences in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience) and overall computer phobia of senior secondary school teachers are presented in following Table 4.3.

TABLE 4.3

't' Value Showing Significance Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Marital Status

Sr. No.	Dimension	Married	Unmarried	d_f	SE_D	t-value
1.	Personal Failure	N= 188	N= 187	373	0.749	2.429 *
		Mean=30.29	Mean=32.11			
		SD=6.967	SD= 7.533			
2.	Human Vs. Machine Ambiguity	N= 188	N= 187	373	0.470	0.255^{NS}
		Mean=20.40	Mean=20.52			
		SD= 4.535	SD= 4.575			
3.	Convenience	N= 188	N= 187	373	0.515	0.922^{NS}
		M= 23.72	M=24.24			
		SD=4.927	SD= 5.046			
4.	Overall Computer Phobia	N= 188	N= 187	373	1.428	1.714^{NS}
		M= 74.42	M= 76.87			
		SD= 13.659	SD=13.983			

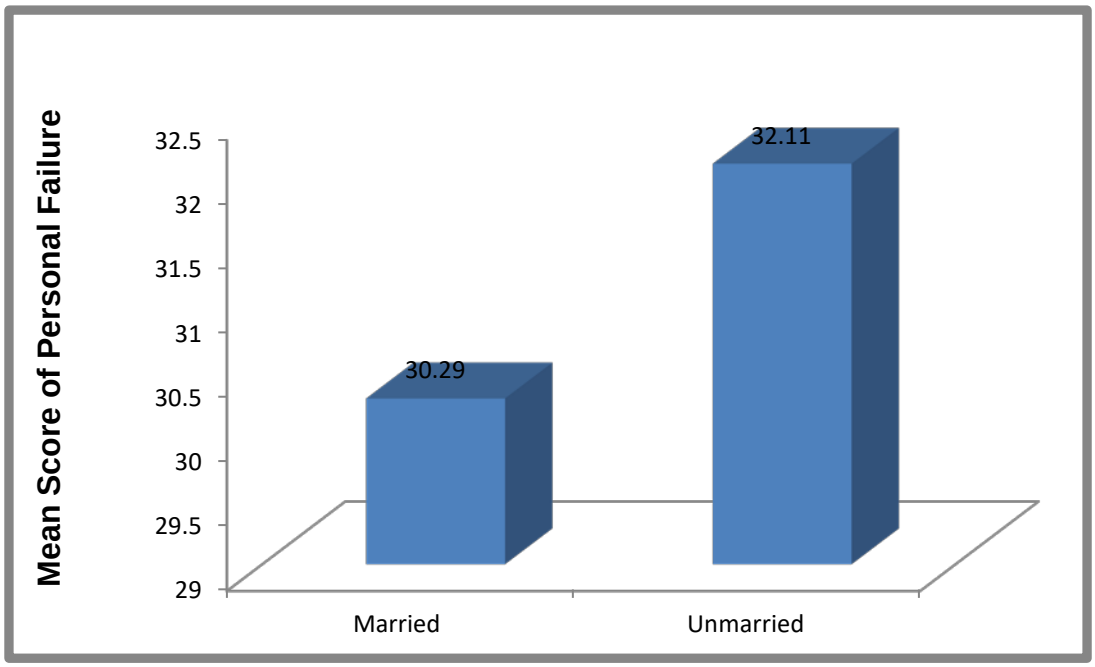
NS----------Not Significant***** **-----** Significant at 0.05 level

4.3 (i)Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure

Table 4.3 shows that the mean personal failure score of married senior secondary school teachers was computed to be 30.29 with SD of 6.967 while the mean personal failure score of unmarried senior secondary schoolteachers was found to be 32.11 with SD of 7.533.The calculated value of 't' for the testing the significance of the mean difference was found to be 2.429 which was significant at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 2(i) that, "There exists no significant marital status-wise difference in personal failure of senior secondary school teachers", was not accepted. Hence, it may be interpreted that the married and unmarried senior secondary school teachers differed significantly with respect their personal failure. Unmarried senior secondary school teachers possessed low personal failure as compared to married senior secondary school teachers. The marital status-wise difference among senior secondary school teachers in terms of personal failure is shown in Figure 4.7.

FIGURE 4.7

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure

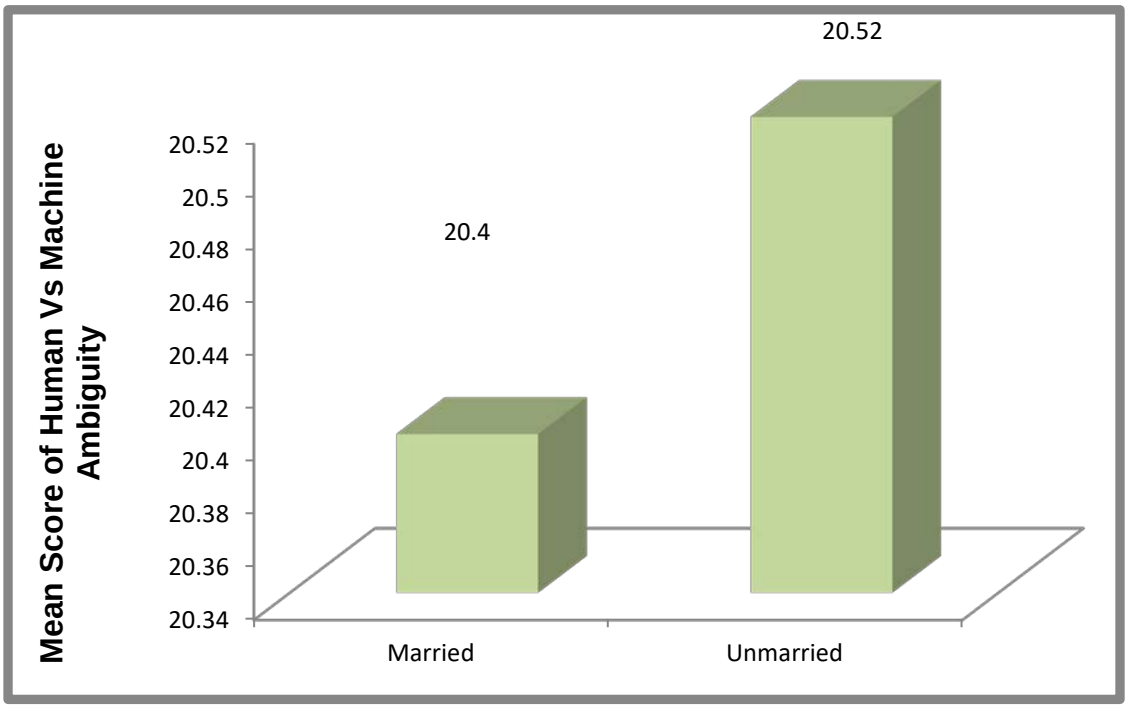


4.3 (ii) Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity

Table 4.3 further shows that the mean human vs machine ambiguity score of married senior secondary school teachers on was computed to be 20.40 with SD of 4.535 and the mean human vs machine ambiguity score of unmarried senior secondary school teachers was found to be 20.52 with SD of 4.575. The calculated value of 't' for the testing the significance of the mean difference was found to be 0.255 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 2(ii) that, "There exists no significant marital status-wise difference in human vs machine ambiguity of senior secondary school teachers", was accepted. Hence, it may be interpreted that married and unmarried senior secondary school teachers do not differ significantly with respect to human vs machine ambiguity. The marital status-wise difference among senior secondary school teachers in terms of human vs machine ambiguity is shown in Figure 4.8

FIGURE 4.8

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



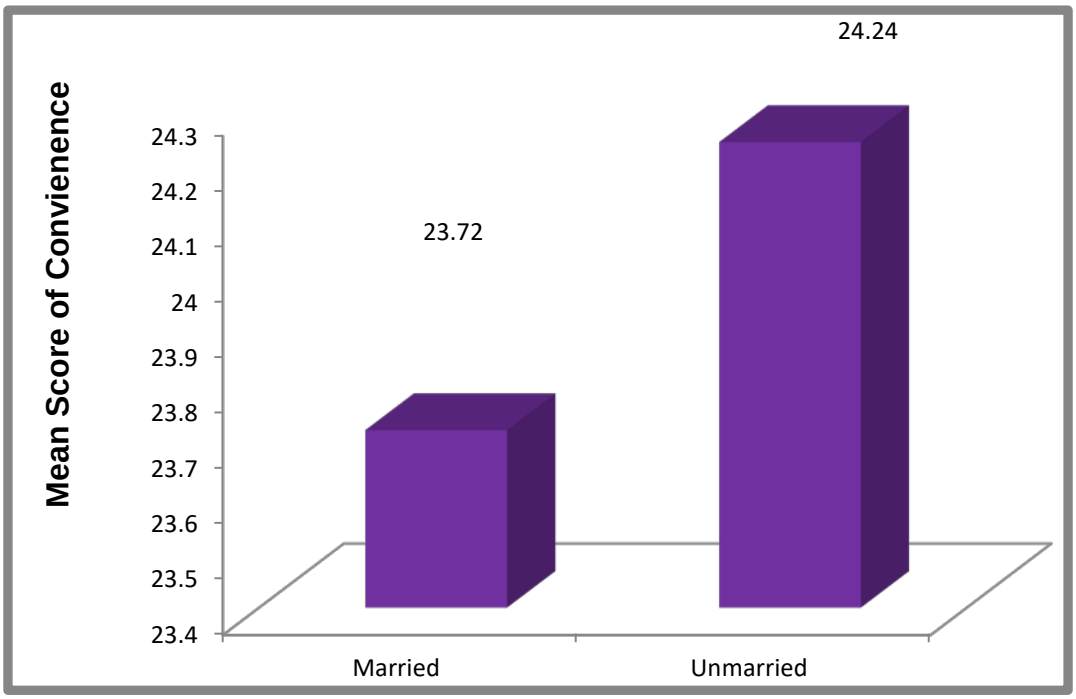
4.3 (iii) Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Convenience

The mean convenience score of married senior secondary school teachers was found to be 23.72 with SD of 4.927. Similarly, mean convenience score of unmarried senior secondary school teachers was 24.24 with SD of 5.046. Further, the calculated value of 't' for the testing the significance of the mean difference was found to be 0.255 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 2(iii) that, "There exists no significant marital status-wise difference in convenience of senior secondary school teachers", was accepted. Hence, it may be interpreted that the married and unmarried senior secondary school teachers do not differ significantly with respect to their convenience.

The marital status-wise difference among senior secondary school teachers in terms of convenience is shown in Figure 4.9.

FIGURE 4.9

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Convenience

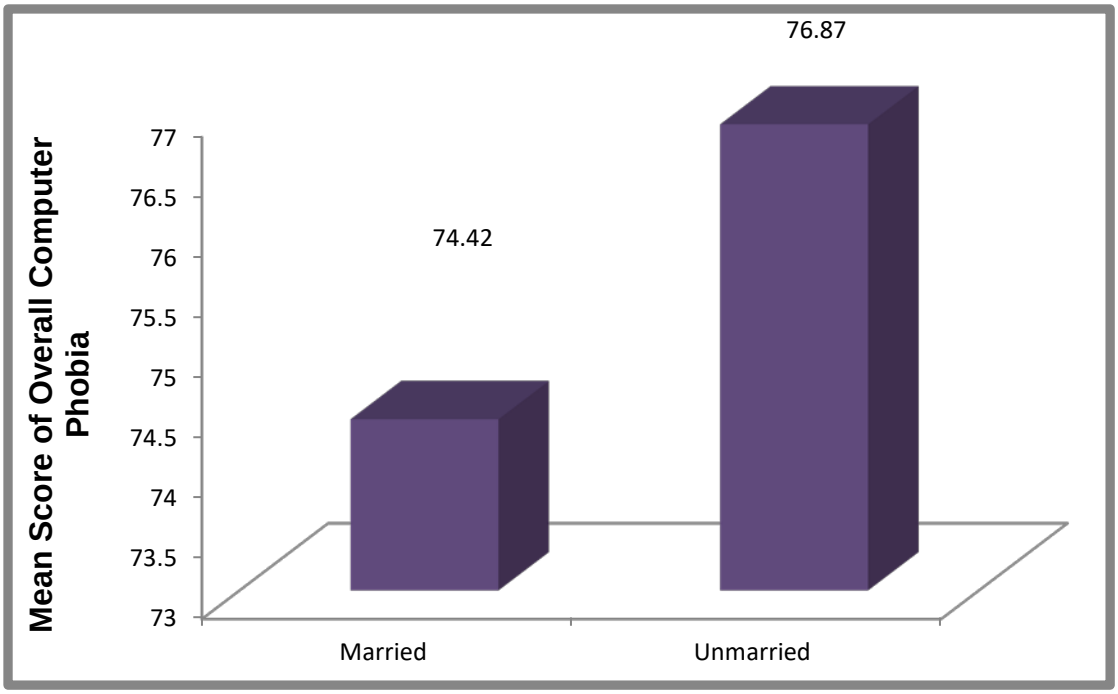


4.3 (iv) Marital Status-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia

In addition, the mean overall computer phobia score of married senior secondary school teachers was computed to be74.42 with SD of 13.659 and mean score of unmarried senior secondary school teachers was found to be 76.87 with SD of 13.983.The calculated value of 't' for the testing the significance of the mean difference was found to be 1.714 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 2(iv) that, "There exists no significant marital status-wise difference in overall computer phobia of senior school teachers", was accepted. Hence, it may be interpreted that the married and unmarried senior secondary school teachers do not differ significantly with respect to their overall computer phobia. The marital status-wise difference among senior secondary school teachers in terms of overall computer phobia is shown in Figure 4.10.

FIGURE 4.10

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



4.4 STREAM-WISE DIFFERENCE AMONG SENIOR SECONDARY SCHOOL TEACHERS IN TERMS OF COMPONENTS OF COMPUTER PHOBIA AND OVERALL COMPUTER PHOBIA

In order to study the effect of stream-wise difference on computer phobia (component-wise and overall) among senior secondary school teachers, the statistical technique of 't-test' was applied. The results obtained after applying t-value to ascertain stream-wise differences in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience) and overall computer phobia of senior secondary school teachers are presented in following Table 4.4.

TABLE 4.4

't' Value Showing Significance Difference in Mean Scores of ' Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Stream

Sr. No.	Dimension	Arts	Science	d_f	SE_D	t-value
1.	Personal failure	N= 173	N= 202	373	2.121	2.830**
		Mean=30.05	Mean=32.17			
		SD=7.529	SD=6.973			
2.	Human Vs. Machine Ambiguity	N= 173	N= 202	373	0.089	0.188^{NS}
		Mean=20.42	Mean=20.50			
		SD= 4.590	SD= 4.524			
3.	Convenience	N= 173	N= 202	373	0.832	1.614^{NS}
		M= 23.55	M=24.38			
		SD=5.122	SD= 4.846			
4.	Overall Computer Phobia	N= 173	N= 202	373	3.077	2.154*
		M= 73.98	M= 77.06			
		SD=13.996	SD=13.612			

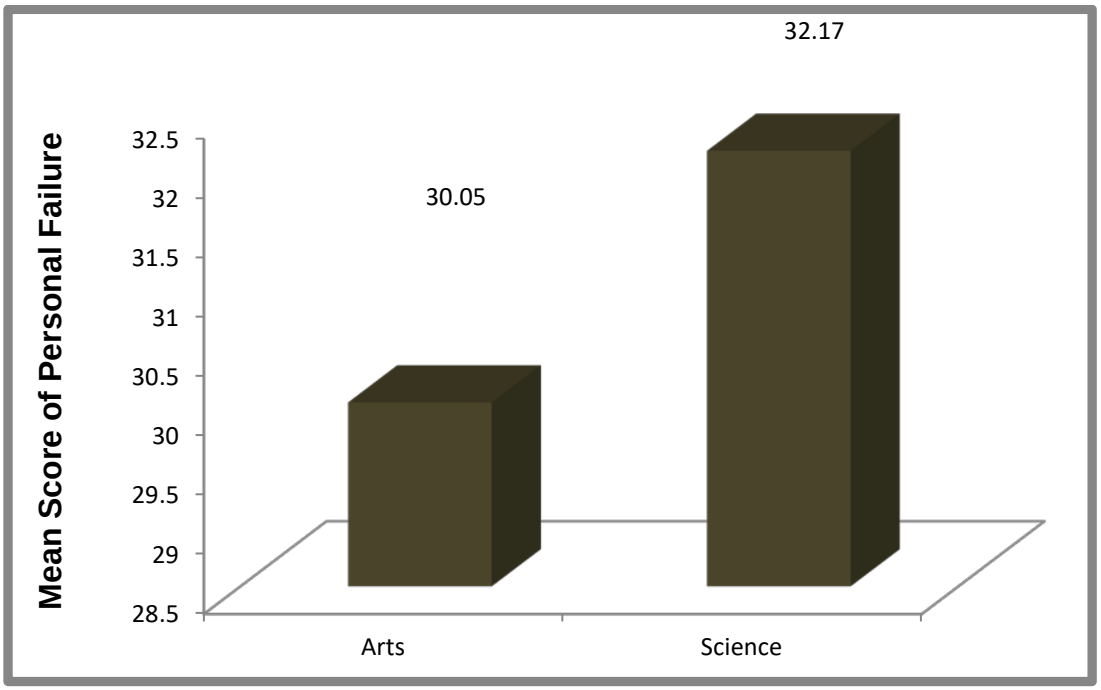
NS----------Not Significant

*** -----** Significant at 0.05 level**** -----** Significant at 0.01 level

4.4 (i) Stream-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure

Table 4.4shows that the mean personal failure score of senior secondary school teachers of arts stream was found to be 30.05 with SD of 7.529. Similarly, the mean personal failure score of senior secondary school teachers of science stream was computed to be 32.17 with SD of 6.973. Further, the calculated value of 't' for the testing the significance of the mean difference was found to be 2.830 which was significant even at 0.01 level of significance for d_f 373. Hence, the Hypothesis No. 3 (i) that, "There exists no significant stream-wise difference in personal failure of senior secondary school teachers", was not accepted. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differed significantly with respect to personal failure. Senior secondary school teachers of science stream possessed low personal failure as compared to senior secondary school teachers of arts stream. The stream-wise difference among senior secondary school teachers in terms of personal failure is shown in Figure 4.11.

FIGURE 4.11
Stream-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure

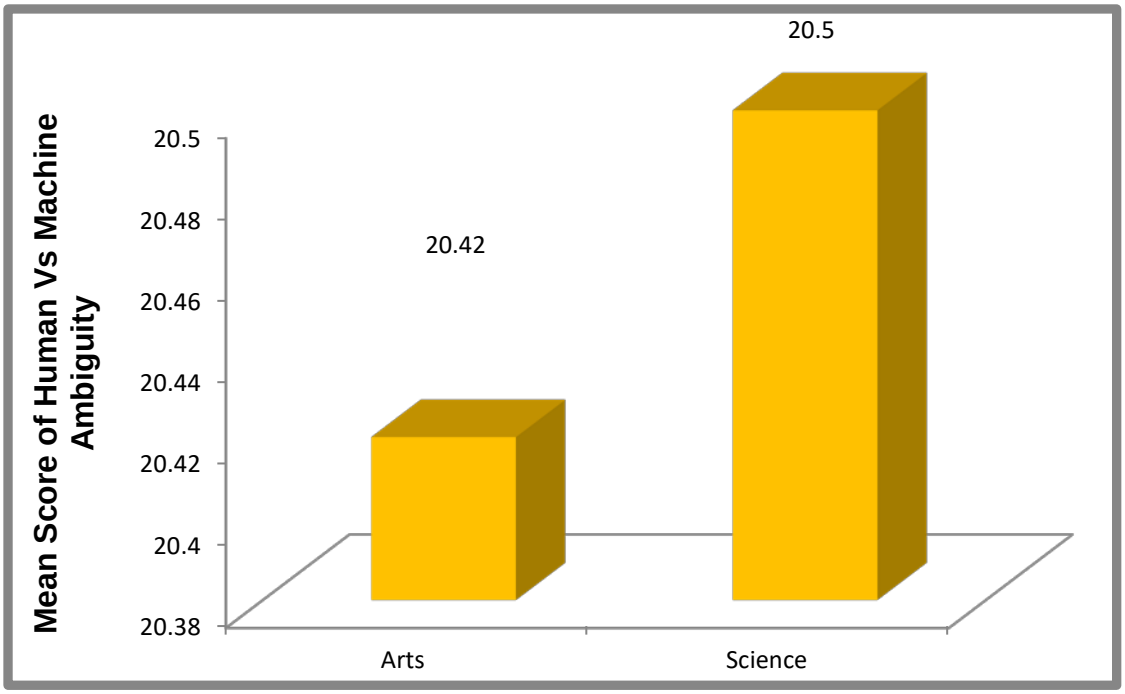


4.4 (ii) Stream-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity

The mean human vs machine ambiguity score of senior secondary school teachers of arts stream was computed to be 20.42 with SD of 4.590 while the mean score of senior secondary school teachers of science stream was found to be 20.50 with SD of 4.524. Further, the calculated value of 't' for testing the significance of the mean difference was found to be 0.188 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 3(ii) that, "There exists no significant stream-wise difference in human vs machine ambiguity of senior secondary school teachers", was accepted. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream do not differ significantly with respect to human vs machine ambiguity. The stream-wise difference among senior secondary school teachers in terms of human vs machine ambiguity is shown in Figure 4.12.

FIGURE 4.12

Stream-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



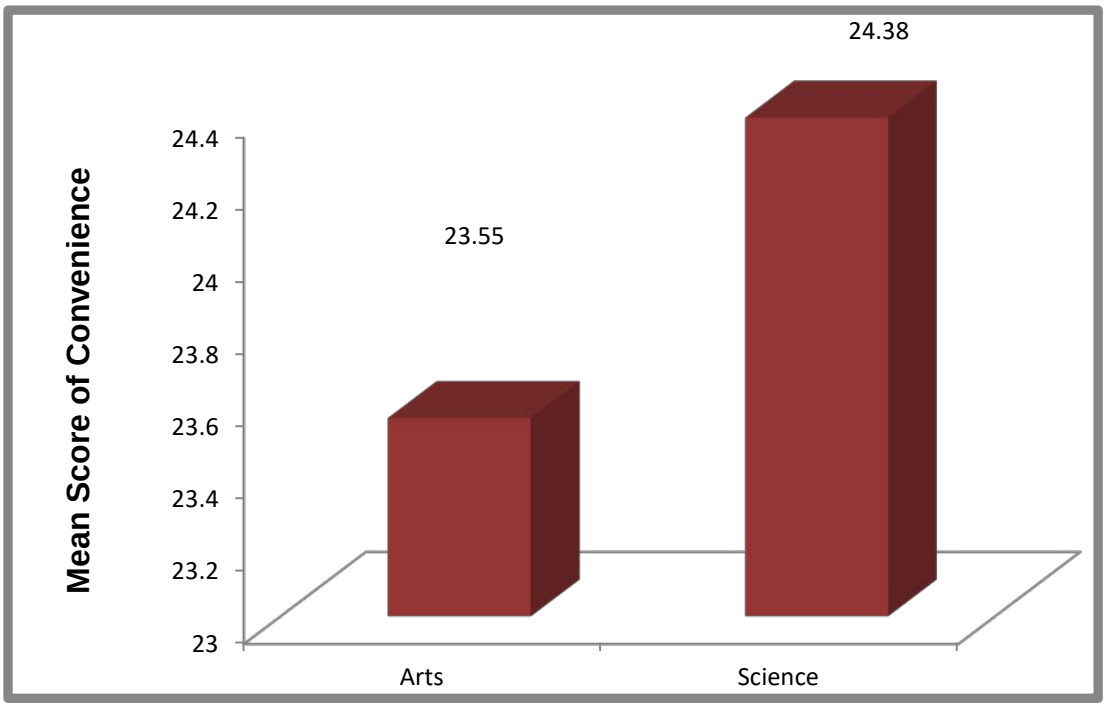
4.4 (iii) Stream-Wise Difference among Senior Secondary School Teachers in terms of Convenience

The mean convenience score of senior secondary school teachers of arts stream was found to be 23.55 with SD of 5.122. Similarly, mean convenience score of senior secondary school teachers of science stream was 24.38 with SD of 4.846. Further, the calculated value of 't' for the testing the significance of the mean difference was found to be 1.614 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 3(iii) that, "There exists no significant stream-wise difference in convenience of senior secondary school teachers", was accepted. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream do not differ significantly with respect to convenience.

The stream-wise difference among senior secondary school teachers in terms of convenience is shown in Figure 4.13.

FIGURE 4.13

Stream-wise Difference among Senior Secondary School Teachers in Terms of Convenience

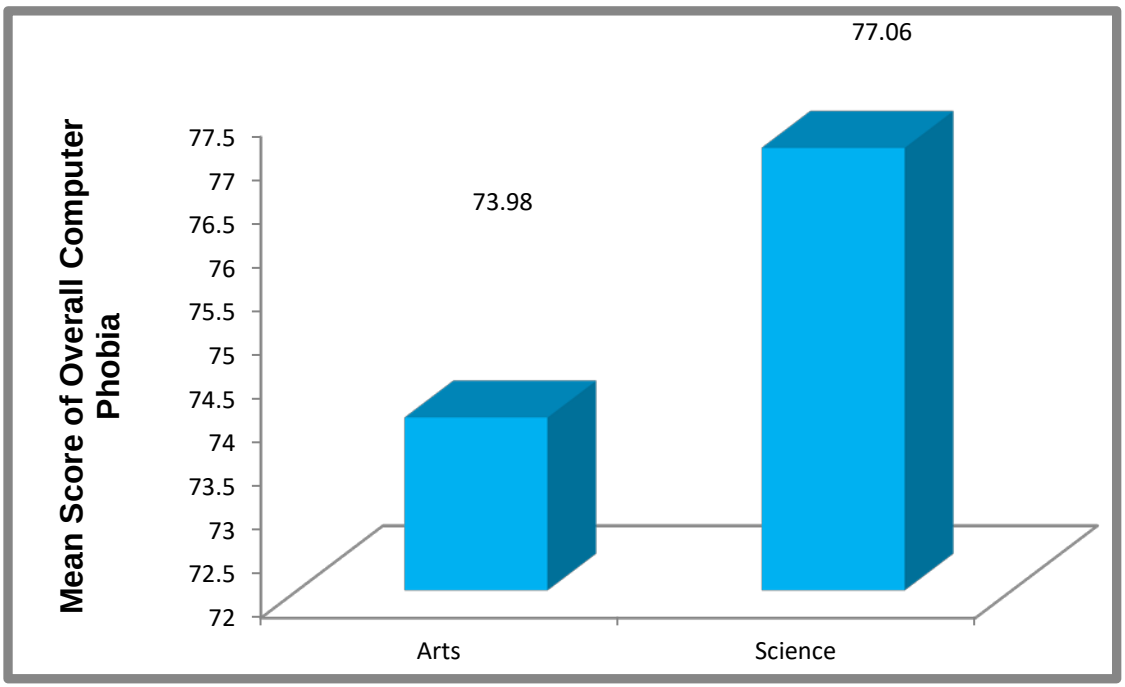


4.4 (iv) Stream-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia

In addition, the mean overall computer phobia score of senior secondary school teachers of arts stream was computed to be 73.98 with SD of 13.996 and the mean overall computer phobia score of senior secondary school teachers of science stream was found to be 77.06 with SD of 13.612. The calculated value of 't' for the testing the significance of the mean difference was found to be 2.154 which was significant at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 3(iv) that, "There exists no significant stream-wise difference in overall computer phobia of senior secondary school teachers", was not accepted. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differ significantly with respect to their overall computer phobia. Senior secondary school teachers of science stream possessed low overall computer phobia as compared to senior secondary school teachers of arts stream. The stream-wise difference among senior secondary school teachers in terms of overall computer phobia is shown in Figure 4.14.

FIGURE 4.14

Stream-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



4.5 LOCALITY-WISE DIFFERENCE AMONG SENIOR SECONDARY SCHOOL TEACHERS IN TERMS OF COMPONENTS OF COMPUTER PHOBIA AND OVERALL COMPUTER PHOBIA

In order to know the effect of locality-wise difference on computer phobia (component-wise and overall) among senior secondary school teachers, the statistical technique of 't-test' was applied. The results obtained after applying t-value to ascertain locality-wise differences in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience) and overall computer phobia of senior secondary school teachers are presented in following Table 4.5.

TABLE 4.5

't' Value Showing Significance Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Locality

Sr. No.	Dimension	Urban	Rural	d_f	SE_D	t-value
1.	Personal failure	N= 195	N= 180	373	0.755	0.566^{NS}
		Mean=31.40	Mean=30.97			
		SD=7.600	SD= 6.979			
2.	Human Vs. Machine Ambiguity	N= 195	N= 180	373	0.470	0.807^{NS}
		Mean=20.65	Mean=20.27			
		SD= 4.523	SD= 4.581			
3.	Convenience	N= 195	N= 180	373	0.516	0.362^{NS}
		M= 23.91	M=24.09			
		SD=5.092	SD= 4.880			
4.	Overall Computer Phobia	N= 195	N= 180	373	1.434	0.456^{NS}
		M= 75.95	M= 75.95			
		SD=14.016	SD=13.714			

NS----------Not Significant

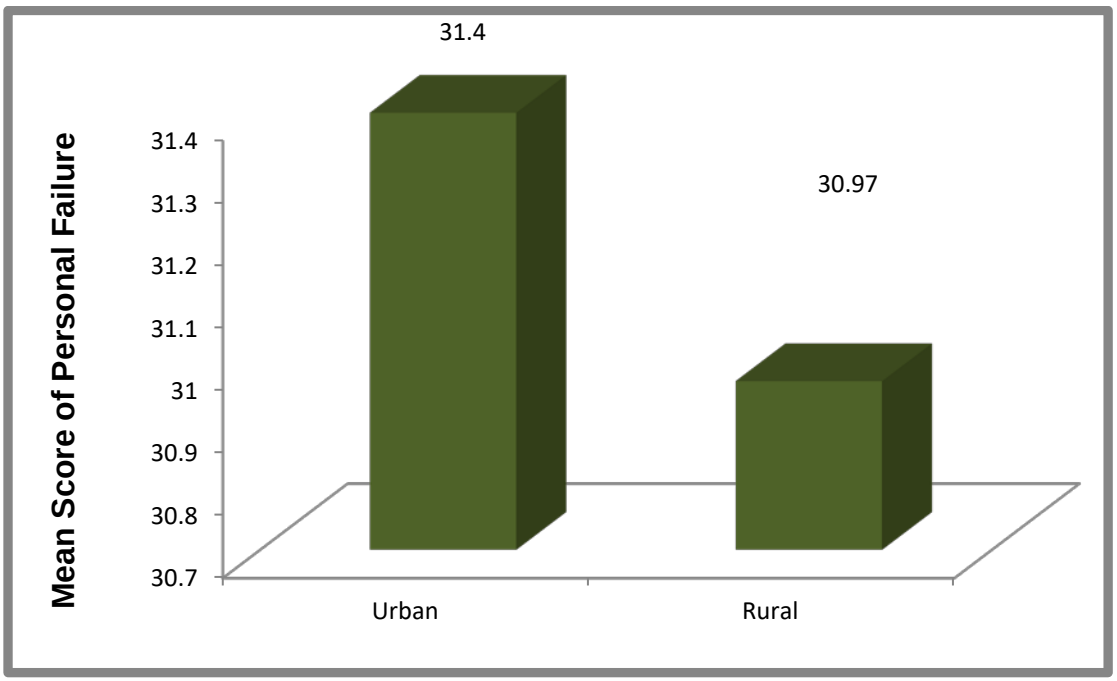
4.5 (i) Locality-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure

From Table 4.5, it is clear that the mean personal failure score of urban senior secondary school teachers was found to be31.40 with SD of 7.600 and the mean personal failure score of rural senior secondary school teachers was 30.97 with SD of 6.979. Further, the calculated value of 't' for the testing the significance of the mean difference was found to be 0.566 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 4 (i) that, "There exists no significant locality-wise difference in personal failure of senior secondary school teachers", was accepted. Hence, it may be interpreted that the both urban and rural senior secondary school teachers do not differ significantly with respect to their personal failure.

The locality-wise difference among senior secondary school teachers in terms of personal failure is shown in Figure 4.15.

FIGURE 4.15

Locality-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure

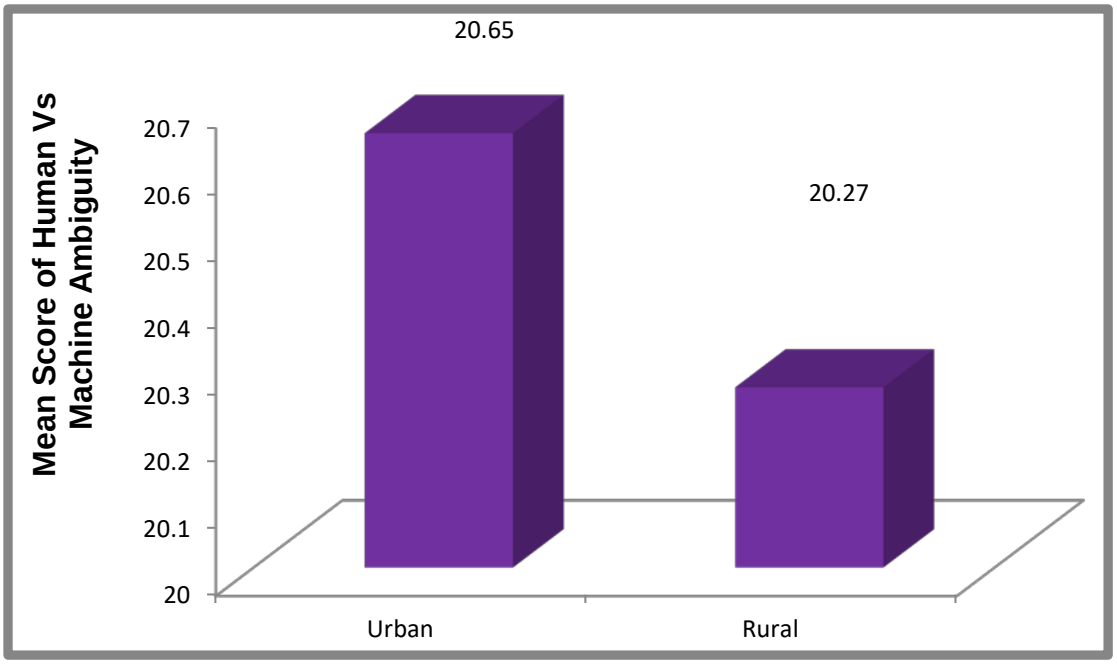


4.5 (ii) Locality-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity

Further, the mean human vs machine ambiguity score of urban senior secondary school teachers was computed to be 20.65 with SD of 4.523. Similarly, the mean human vs machine ambiguity score of rural senior secondary school teachers was found to be 20.27 with SD of 4.581. The calculated value of 't' for the testing the significance of the mean difference was found to be 0.807 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 4(ii) that, "There exists no significant locality-wise difference in human vs machine ambiguity of senior secondary school teachers", was accepted. Hence, it may be interpreted that the both urban and rural senior secondary school teachers do not differ significantly with respect to human vs machine ambiguity. The locality-wise difference among senior secondary school teachers in terms of human vs machine ambiguity is shown in Figure 4.16.

FIGURE 4.16

Locality-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity

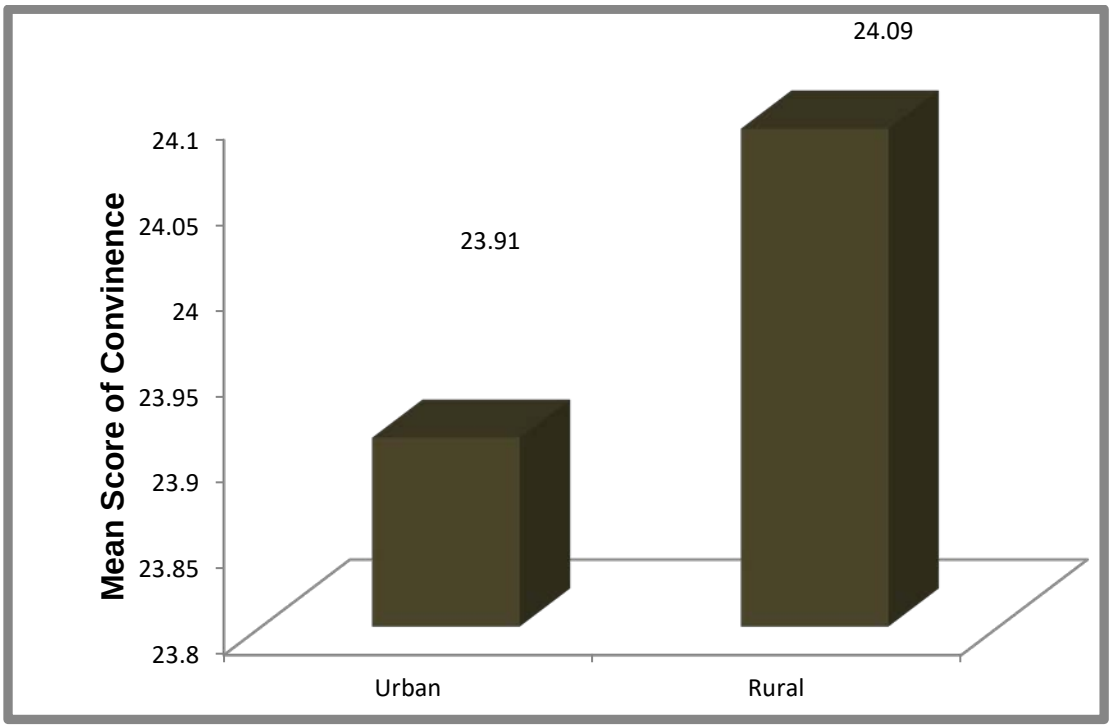


4.5 (iii) Locality-Wise Difference among Senior Secondary School Teachers in terms of Convenience

The mean convenience score of senior secondary school teachers who belongs to urban area was found to be 23.91 with SD of 5.092 and the mean convenience score of senior secondary school teachers who belongs to rural area was computed to be 24.09 with SD of 4.880. Further, the calculated value of 't' for the testing the significance of the mean difference was found to be 0.516 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 4(iii) that, "There exists no significant locality-wise difference in convenience of senior secondary school teachers", was accepted. Hence, it may be interpreted that the senior secondary school teachers of both urban and rural areas do not differ significantly with respect to their convenience. The locality-wise difference among senior secondary school teachers in terms of convenience is shown in Figure 4.17.

FIGURE 4.17

Locality-wise Difference among Senior Secondary School Teachers in Terms of Convenience

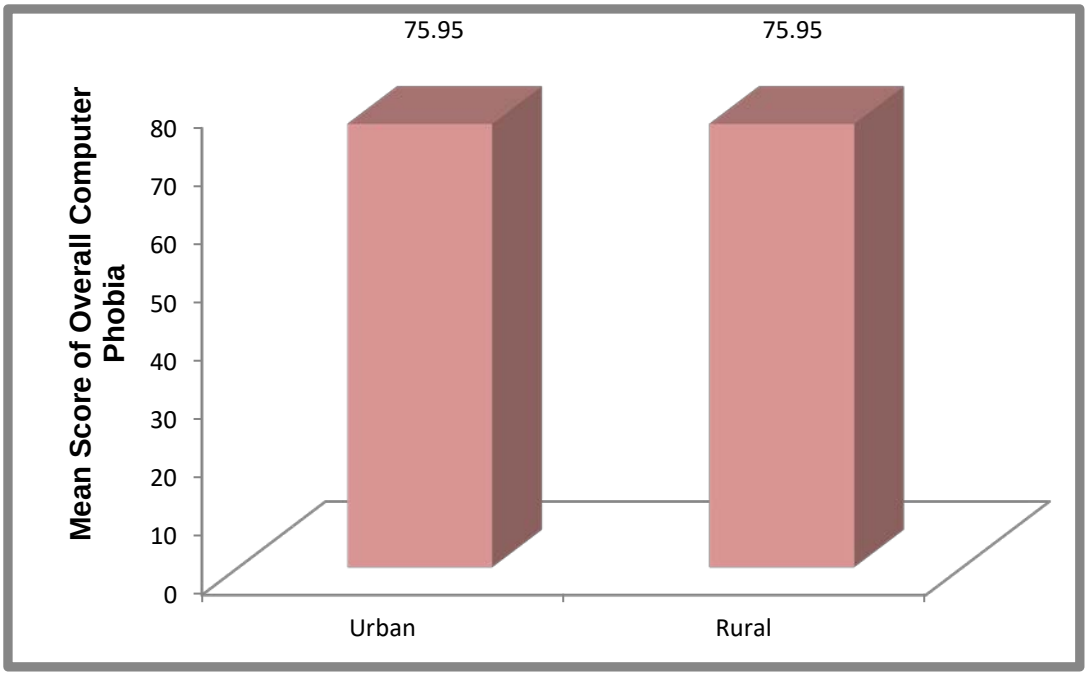


4.5 (iv) Locality-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia

In addition, the mean overall computer phobia score of senior secondary school teachers of urban area was computed to be 75.95 with SD of 14.016. Similarly, the mean overall computer phobia score of senior secondary school teachers of rural area was found to be 75.95 with SD of 13.714. The calculated value of 't' for the testing the significance of the mean difference was found to be 0.456 which was not significant even at 0.05 level of significance for d_f 373. Hence, the Hypothesis No. 4(iv) that, "There exists no significant locality-wise difference in overall computer phobia of senior secondary school teachers", was accepted. So, it may be interpreted that senior secondary school teachers of both urban and rural areas do not differ significantly with respect to their overall computer phobia.The locality-wise difference among senior secondary school teachers in terms of overall computer phobia is shown in Figure 4.18.

FIGURE 4.18

Locality-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



4.6 SCHOOL-WISE DIFFERENCE AMONG SENIOR SECONDARYSCHOOL TEACHERS IN TERMS OF COMPONENTS OF COMPUTER PHOBIA AND OVERALL COMPUTER PHOBIA

The results obtained after applying t-test to find out school-wise differences in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience)and overall computer phobia of senior secondary school teachers are presented in following Table 4.6.

TABLE 4.6

't' Value Showing Significance Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their School Type

Sr. No.	Dimension	Govt. Schools	Private Schools	d_f	SE_D	t-value
1.	Personal failure	N= 197	N= 178	373	0.756	0.094^{NS}
		Mean=31.23	Mean=31.16			
		SD=7.925	SD= 6.566			
2.	Human Vs. Machine Ambiguity	N= 197	N= 178	373	0.469	1.585^{NS}
		Mean=20.82	Mean=20.07			
		SD= 4.658	SD= 4.405			
3.	Convenience	N= 197	N= 178	373	0.516	0.842^{NS}
		M= 24.20	M=23.78			
		SD=5.685	SD= 4.079			
4.	Overall Computer Phobia	N= 197	N= 178	373	1.434	0.842^{NS}
		M= 76.21	M= 75.01			
		SD=15.452	SD=11.829			

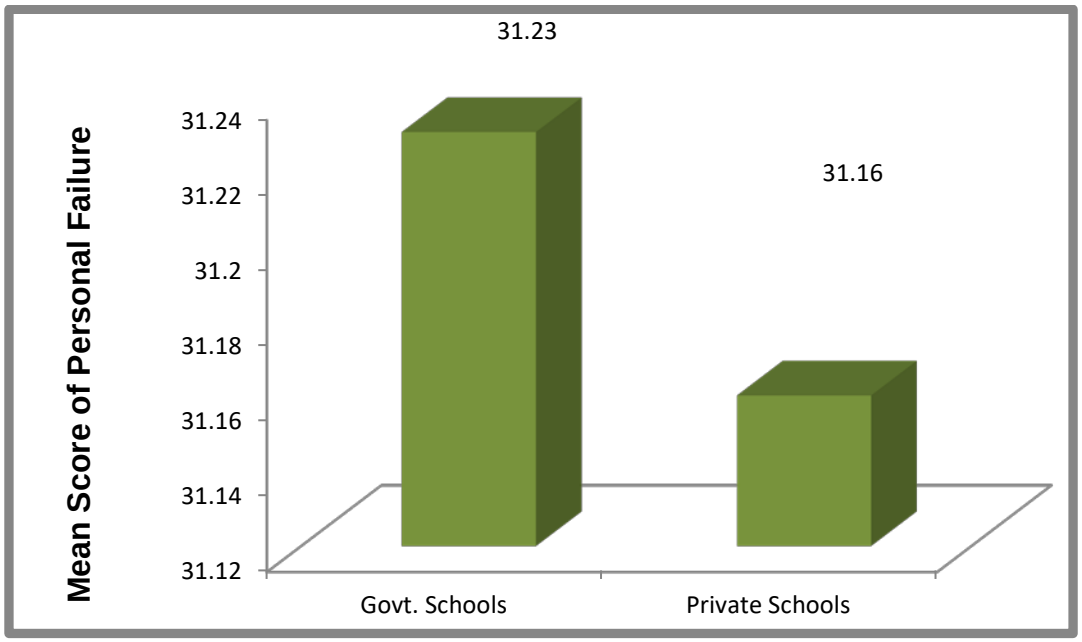
NS----------Not Significant

4.6 (i) School-Wise Difference among Senior Secondary School Teachers in terms of Personal Failure

Table 4.6 shows that the mean personal failure score of government senior secondary school teachers was found to be31.23 with SD of 7.925. Similarly, the mean personal failure score of private senior secondary school teachers was computed to be 31.16 with SD of 22.525. Further, the calculated value of 't' for comparing the mean of personal failure of senior secondary school teachers teaching in both government and private schools was found to be 0.094 which is less than the table value even at 0.05 level of significance, for d_f 373.Hence, the Hypothesis No. 5(i) that, "There exists no significant school-wise difference in personal failure of senior secondary school teachers", was accepted. So, it may be averred that government and private senior secondary school teachers do not differ significantly from each other in terms of their personal failure. The school-wise difference among senior secondary school teachers in terms of personal failure is shown in Figure 4.19.

FIGURE 4.19

School-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure

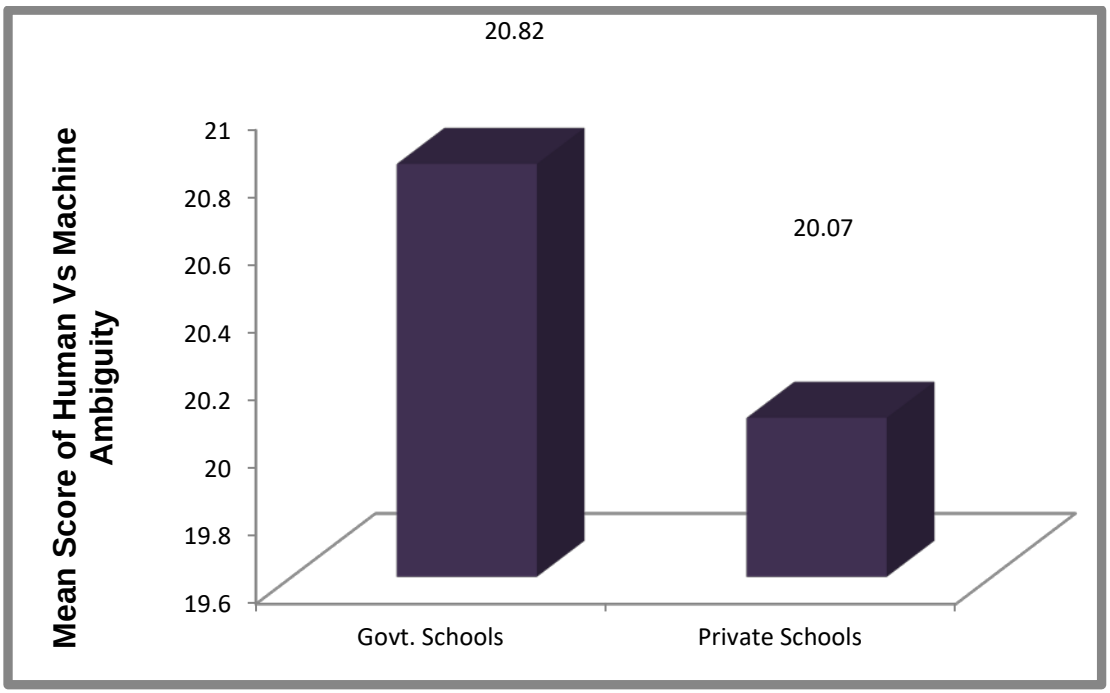


4.6 (ii) School-Wise Difference among Senior Secondary School Teachers in terms of Human Vs Machine Ambiguity

The mean human vs machine ambiguity score of government senior secondary school teachers was computed to be 20.82 with SD of 4.658and the mean human vs machine ambiguity score of private senior secondary school teachers came out to be20.07 with SD of 4.405. Further, the calculated value of 't' for comparing the mean of human vs machine ambiguity of senior secondary school teachers teaching in both government and private schools was found to be 1.585 which is less than the table value even at 0.05 level of significance, for d_f 373.Hence, the Hypothesis No. 5(ii) that, "There exists no significant school-wise difference in human vs machine ambiguity of senior secondary school teachers", was accepted. So, it may be averred that government and private senior secondary school teachers do not differ significantly from each other in terms of human vs machine ambiguity. The school-wise difference among senior secondary school teachers in terms of human vs machine ambiguity is shown in Figure 4.20.

FIGURE 4.20

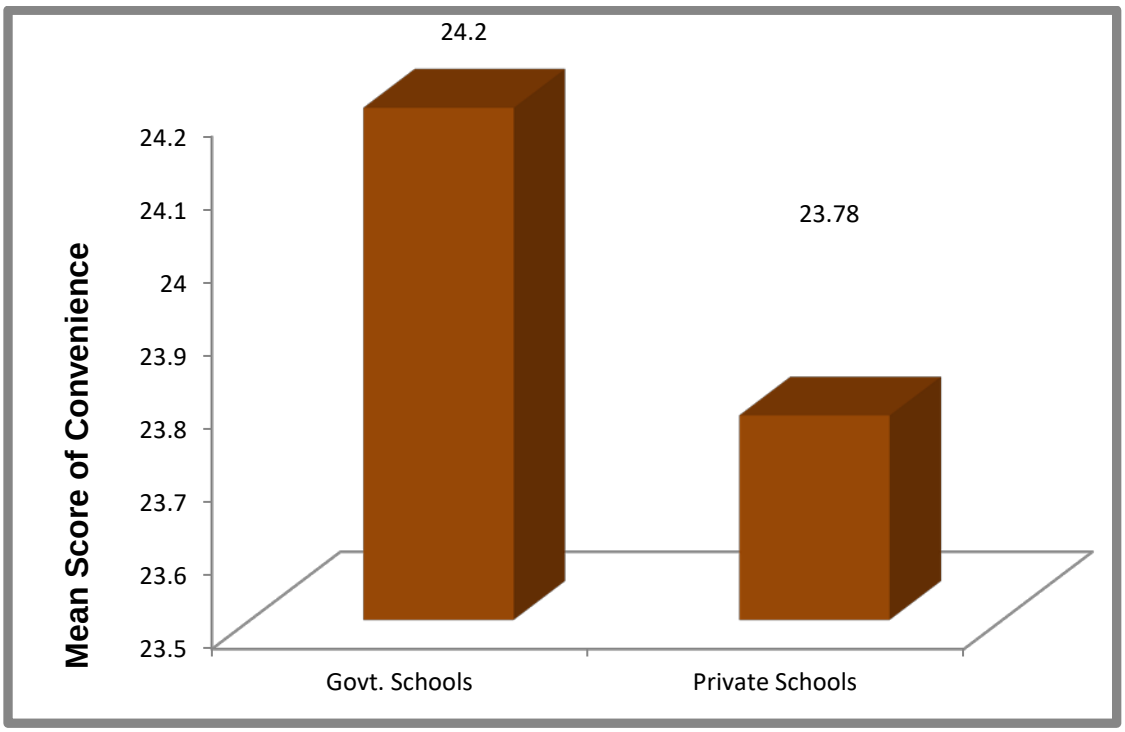
School-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



4.6 (iii) School-Wise Difference among Senior Secondary School Teachers in terms of Convenience

Further the Table depicts that the mean convenience score of senior secondary school teachers teaching in government schools was computed to be 24.20with SD of 5.685 and the mean convenience score of senior secondary school teachers teaching in private schools was found to be 23.78 with SD of 4.079.The calculated t-value for mean difference in convenience was found to be 0.842 which is not significant even at 0.05 level of significance, for d_f323. Hence, Hypothesis No. 5 (iii) that, "There exists no significant school-wise difference in convenience of senior secondary school teachers", was retained. This implies that senior secondary school teachers teaching in govt. and private schools do not differ significantly from each other in terms of their convenience. The school-wise difference among senior secondary school teachers in terms of convenience is shown in Figure 4.21.

FIGURE 4.21
School-wise Difference among Senior Secondary School Teachers in Terms of Convenience



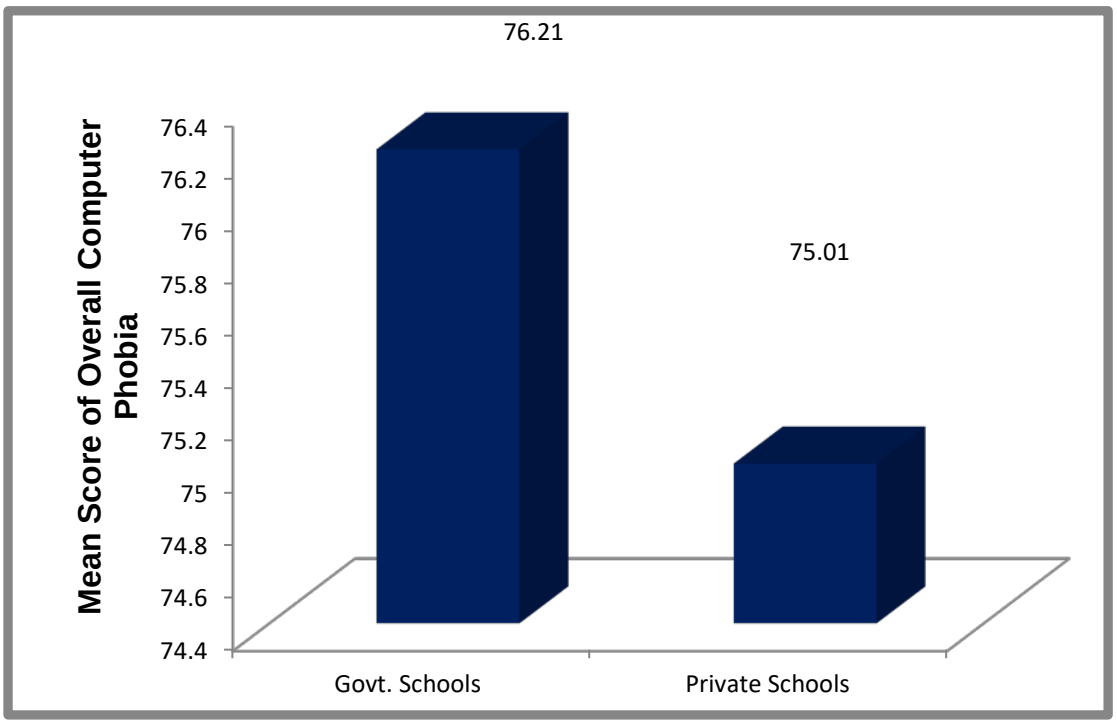
4.6 (iv) School-Wise Difference among Senior Secondary School Teachers in terms of Overall Computer Phobia

In addition, the mean overall computer phobia score of senior secondary school teachers teaching in government schools was found to be 76.21with SD of 15.452and the mean overall computer phobia score of senior secondary school teachers teaching in private schools came out to be 75.01 with SD of 11.829.Further, the calculated t-value for mean difference in overall computer phobia was found to be 0.842 which is not significant even at 0.05 level of significance, for d_f323. Hence, Hypothesis No. 5 (iv) that, "There exists no significant school-wise difference in overall computer phobia of senior secondary school teachers", was accepted. This implies that teachers teaching in govt. and private schools do not differ significantly from each other in terms of overall computer phobia.

The school-wise difference among senior secondary school teachers in terms of overall computer phobia is shown in Figure 4.22.

FIGURE 4.22

School-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



4.7 VIEWS OF SENIOR SECONDARY SCHOOL TEACHERS ABOUT COMPUTER PHOBIA

The views of senior secondary school teachers about computer phobia is tabulated in Table 4.7.

TABLE 4.7

Views of Senior Secondary School Teachers about Computer Phobia

Item No.	Item Statement and Responses	Number	Percentage
1	Do you feel insecure about your ability to use a computer for institution?		
	(i) Yes	165	(44%)
	(ii) No	210	(56%)
2	Do you think that learning to operate computer is like learning any new skill the more you practice, the better you become?		
	(i) Yes	222	(59%)
	(ii) No	153	(41%)
3	Are you afraid that if you begin to use computer, you will become dependent upon them?		
	(i) Yes	90	(24%)
	(ii) No	285	(76%)
	if yes, then why		
	(i) To become lazy	18	(20%)
	(ii) Create health issues	27	(30%)
	(iii) Create visual problems	35	(38.89%)
	(iv) No Response	2	(2.22%)
4	Do you think that, there may be destruction of a large amount of information by hitting a wrong beg?		
	(i) Yes	189	(50.4%)
	(ii) No	186	(49.6%)
5	Are you afraid to use a computer for fear of making mistakes that you cannot correct?		
	(i) Yes	142	(37.9%)
	(ii) No	233	(62.1%)
6	Do you think that computers are complicated to use during work?		
	(i) Yes	112	(29.9%)
	(ii) No	263	(70.1%)
7	Do you want to learn more about computer?		
	(i) Yes	280	(74.67%)
	(ii) No	95	(25.33%)
8	Do you feel that computers are faster than you?		
	(i) Yes	313	(83.5%)
	(ii) No	62	(16.5%)
9	Do you feel anxious when you try to learn technology related skills?		
	(i) Yes	159	(42.4%)
	(ii) No	216	(57.6%)

Note: All the computed percentage values in decimals have been rounded off to nearest whole numbers but at the same time, total percentage has been kept at100% (in case of close-ended questions).

A majority of senior secondary school teachers (56%) lamented that they do not feel insecure about their ability to use computer for institution, although 44% teachers were of entirely different opinion in this regard. Further, a majority of teachers (59%) also pointed out that the learning to operate computer is like learning a new skill, as we practice more, we learn more and 41% teachers refused in this regard. A good majority of senior secondary school teachers (76%) were of the view that they are not afraid to use computer as they will become dependent upon them. On the other hand, 24% teachers agreed that they begin to use computer, they will become dependent upon them. The effects of using more computers included; (i)create visual problems (38.89%), (ii) create health issues (30%), (iii) to become lazy (20%). A majority of teachers (50.4%) thought that there may be destruction of a large amount of information by hitting a wrong beg but 49.6% teachers disagreed in this regard**.** Further, a good majority of teachers (62.1%) refused to have any fear of making mistakes that cannot be corrected, although 37.9%teachers were agreed with this statement. A large majority of teachers (70.1%) refused that the computer is complicated to use during work. On the other hand, a few teachers (29.9%) accepted the use of computer is complicated during work. A majority of teachers (75.7%) wanted to learn more about computer, whereas 25.3% teachers refused in this regard. Further, a good majority of teachers (83.5%) agreed that computers are faster than the teachers whereas very few (16.5%) teachers disagreed regarding this statement. In addition to this, majority of teachers (57.6%) refused that they feel anxious when they try to learn technology related skills. However, there were 42.4% teachers who have expressed their acceptance in this regard.

4.8 REASONS/CAUSES BEHIND COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS

To identify the causes behind computer phobia among senior secondary school teachers, the views and perception of senior secondary school teachers were sought. The major causes forwarded by respondents are tabulated in Table 4.8.

TABLE 4.8
Views of Senior Secondary Schools Teachers regarding Reasons/Causes behind Computer Phobia

Item No.	Item Statement and Responses	Number	Percentage
10	Reasons behind computer phobia among senior secondary school teachers		
	(i) Lack of computer knowledge	120	(32%)
	(ii) Inadequate ICT facilities	68	(18.13%)
	(iii) Lack of Confidence	135	(36%)
	(iv) Fear of making mistakes while using computer	108	(28.8%)
	(v) Lack of opportunities to use computer in the theory classes	148	(39.47%)
	(vi) Lack of sufficient time during classes	98	(26.13%)
	(vii) Lack of practice	112	(29.87%)
	(viii) Lack of technology-related skills to operate the computer	172	(45.87%)
	(ix) No Response	6	(1.6%)

Note: All the computed percentage values in decimals have been rounded off to nearest whole numbers but at the same time, total percentage has been kept at100% (in case of close-ended questions).

Table 4.8 reveals the different causes of computer phobia among senior secondary school teachers included; (i) lack of technology-related skills to operate the computer (44.53%), (ii) lack of opportunities to use computer in theory classes (39.47%), (iii) lack of confidence (36%), (iv) lack of computer knowledge (32%), (v) lack of practice (29.87%), (vi) fear of making mistakes while using computer

(28.8%), (vii) lack of sufficient time during classes (26.13%), and (vii) Inadequate ICT facilities (18.13%).

4.9 UGGESTIONS TO REDUCE COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS

In order to reduce computer phobia among senior secondary school teachers, the suggestions were sought. The suggestions given by them are tabulated in Table 4.9.

TABLE 4.9
Suggestion forwarded by Senior Secondary School Teachers to Reduce Computer Phobia among them

Item No.	Item Statement and Responses	Number	Percentage
11	Suggestions for reducing computer phobia among senior secondary school teachers		
	(i) To reduce work load of the teachers	198	(52.8%)
	(ii) Organization of faculty development programme for Teachers	142	(37.87%)
	(iii) Focus on maximum use of ICT in Teacher Training programmes	168	(44.8%)
	(iv) Make computer education as a compulsory subject in curriculum	157	(41.87%)
	(v) Counselling programmes for the teachers to reduce fear of using computer	115	(30.67%)
	(vi) Orientation programmes, workshops and seminars should be organized	184	(49.07%)
	(vii) Use of computer should be mandatory in teacher training programmes	165	(44%)
	(viii) Providing awareness campaign regarding use of technology among teachers	148	(39.45%)
	(ix) Emphasis on technology-related skills to operate computer	120	(32%)
	(x) No Response	5	(1.3%)

Note: All the computed percentage values in decimals have been rounded off to nearest whole numbers but at the same time, total percentage has been kept at100% (in case of close-ended questions).

Table 4.9 depicts that the suggestions given by teachers for reducing computer phobia among senior secondary school teachers included; (i) to reduce workload of teachers (52.8%), (ii) Orientation programme, workshops and seminars should be organized (49.07%), (iii) focus on maximum use of ICT in Teacher Training programmes (44.8%), (iv) use of computer education should be mandatory in teacher training programme (44%), (v) make computer education as a compulsory subject in curriculum (41.87%), (vi) providing awareness campaign regarding use of technology among teachers (39.45%), (vii) organization of faculty development programme for Teachers(37.87%), (viii)emphasis on technology-related skills to operate computer(32%), and (ix) counseling programmes for the teachers to reduce fear of using computer (32%).

Chapter V

Conclusions, Educational Implications and Suggestions for Further Research

CHAPTER V
CONCLUSIONS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 CONCLUSIONS

On the basis of analysis of data and interpretation of findings, following conclusions were drawn:

1 The mean computer phobia score was found to be 75.64 (out of 116) with a S.D. of 13.857. A very less (4.53%) senior secondary school teachers possessed low computer phobia (scores from 102 to 115). Further, a few teachers (11.20%) had shown below average computer phobia (scores from 89 to 101). On the other hand, somewhat less than two third (67.20%) senior secondary school teachers reflected average level of computer phobia (score from 62 to 88) and few teachers (15.20%) had reflected above average level of computer phobia (score from 49 to 61). Almost negligible teachers (1.87%) possessed high computer phobia (score of 48 and below).

2 (i) There existed no significant gender-wise difference in personal failure among senior secondary school teachers.

(ii) There existed no significant gender-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant gender-wise difference in convenience among senior secondary school teachers.

(iv) There existed no significant gender-wise difference in overall computer phobia among senior secondary school teachers.

3 (i) There existed significant difference in personal failure among senior secondary school teachers with respect to their marital status. Hence, it may be interpreted that the married

and unmarried senior secondary school teachers differed significantly with respect their personal failure. Unmarried senior secondary school teachers possessed low level of personal failure as compared to married senior secondary school teachers.

(ii) There existed no significant difference in human vs machine ambiguity among senior secondary school teachers with respect to their marital status.

(iii) There existed no significant difference in convenience among senior secondary school teachers with respect to their marital status.

(iv) There existed no significant difference in overall computer phobia among senior secondary school teachers with respect to their marital status.

4 (i) There existed significant stream-wise difference in personal failure among senior secondary school teachers. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differed significantly with respect to personal failure. Senior secondary school teachers of science stream possessed low level of personal failure as compared to senior secondary school teachers of arts stream.

(ii) There existed no significant stream-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant stream-wise difference in convenience among senior secondary school teachers.

(iv) There existed significant stream-wise difference in overall computer phobia among senior secondary school teachers. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differ significantly

with respect to their overall computer phobia. Senior secondary school teachers of science stream possessed low level of overall computer phobia as compared to senior secondary school teachers of arts stream.

5 (i) There existed no significant locality-wise difference in personal failure among senior secondary school teachers.

(ii) There existed no significant locality-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant locality-wise difference in convenience among senior secondary school teachers.

(iv) There existed no significant locality-wise difference in overall computer phobia among senior secondary school teachers.

6 (i) There existed no significant difference in personal failure among senior secondary school teachers with respect to their type of school.

(ii) There existed no significant difference in human vs machine ambiguity among senior secondary school teachers with respect to their type of school.

(iii) There existed no significant difference in convenience among senior secondary school teachers with respect to their type of school.

(iv) There existed no significant difference in overall computer phobia among senior secondary school teachers with respect to their type of school.

7 A majority of senior secondary school teachers (56%) lamented that they do not feel insecure about their ability to use computer for institution, although 44% teachers were of entirely different opinion in this regard. Further, a majority of teachers (59%) also

pointed out that the learning to operate computer is like learning a new skill, as we practice more, we learn more and 41% teachers refused in this regard. A good majority of senior secondary school teachers (76%) were of the view that they are not afraid to use computer as they will become dependent upon them. On the other hand, 24% teachers agreed that they begin to use computer, they will become dependent upon them. The effects of using more computers included; (i) create visual problems (38.89%), (ii) create health issues (30%), (iii) to become lazy (20%). A majority of teachers (50.4%) thought that there may be destruction of a large amount of information by hitting a wrong beg but 49.6% teachers disagreed in this regard**.** Further, a good majority of teachers (62.1%) refused to have any fear of making mistakes that cannot be corrected, although 37.9% teachers were agreed with this statement. A large majority of teachers (70.1%) refused that the computer is complicated to use during work. On the other hand, a few teachers (29.9%) accepted the use of computer is complicated during work. A majority of teachers (75.7%) wanted to learn more about computer, whereas 25.3% teachers refused in this regard. Further, a good majority of teachers (83.5%) agreed that computers are faster than the teachers whereas very few (16.5%) teachers disagreed regarding this statement. In addition to this, majority of teachers (57.6%) refused that they feel anxious when they try to learn technology related skills. However, there were 42.4% teachers who have expressed their acceptance in this regard.

8 The different causes / reasons of computer phobia among senior secondary school teachers included; (i) lack of technology-related skills to operate the computer (44.53%), (ii) lack of opportunities to use computer in theory classes (39.47%), (iii) lack of confidence (36%), (iv) lack of computer knowledge (32%), (v) lack of practice (29.87%), (vi) fear of making mistakes while using computer

(28.8%), (vii) lack of sufficient time during classes (26.13%), and (vii) Inadequate ICT facilities (18.13%).

9 The major suggestions given by teachers for reducing computer phobia among senior secondary school teachers included; (i) to reduce workload of teachers (52.8%), (ii) Orientation programme, workshops and seminars should be organized (49.07%), (iii) focus on maximum use of ICT in Teacher Training programmesx (44.8%), (iv) use of computer education should be mandatory in teacher training programme (44%), (v) make computer education as a compulsory subject in curriculum (41.87%), (vi) providing awareness campaign regarding use of technology among teachers (39.45%), (vii) organization of faculty development programme for Teachers (37.87%), (viii) emphasis on technology-related skills to operate computer (32%), and (ix) counselling programmes for the teachers to reduce fear of using computer (32%).

5.2 EDUCATIONAL IMPLICATIONS

The journey of a researcher does not end with merely producing the results of a study. In fact, it is the beginning where the researcher should think of the practical applications of the research findings. The relevance of any research study is entirely dependent on its practical utility for the practitioners and all those who are concerned with the area on which the study was carried out. Against these parameters, the present study may termed to have much relevance and utilitarian value as it has following implications to bring improvements in senior secondary school environment so as to enhance computer knowledge and reduce computer phobia among senior secondary school teachers. Hence, in the light of major findings of the present study, following implications got emerged:

1 The findings of the study revealed that the senior secondary school teachers possessed average level of computer phobia. Therefore, it is imperative that the teachers should make aware

about use of computer so that they may further reduce the fear of making mistakes regarding use of computer. It is suggested that more opportunities should be given to the teachers for using computers in various tasks assigned. The teachers should be given adequate freedom for access to computers and making their frequent use in different tasks like assignments, projects, lesson planning, TLM preparation etc. The greater access and exposure to computers may finally lead towards enhancing efficacy beliefs and lowering of computer-related phobia among senior secondary school teachers.

2 The non-existence of significant difference in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience and overall computer phobia) with respect to their gender. However, it is recommended that there should be efforts to remove the fear of computer from teachers' mind and try to make them understand that it is not difficult to work on it. Teachers should be given sufficient time to do practical work on computers. Appropriate guidance should be provided to remove the computer anxiety among teachers. The appropriate knowledge and skills relevant to the present day needs of schools and the industry be imparted to the senior secondary school teachers in an effective manner so that they can fit perfectly into the profession in near future.

3 The findings of the study revealed the non-existence of significant difference in computer phobia (component-wise i.e. human vs machine ambiguity, convenience and overall computer phobia) with respect to their marital-status. However, the results also revealed the significant difference in the personal failure aspect of computer phobia among senior secondary school teachers. In order to reduce computer phobia among senior secondary school teachers, the teachers should make proper use of computer and they should be continuously motivated to use of computer

without any fear. For removing the phobia about present or future interactions with computers or computer related technology married teachers have to devote more time with working on computers daily.

4 The senior secondary school teachers belonging to science stream possessed significantly low level of personal failure and overall computer phobia in comparison to the senior secondary school teachers of arts stream. This may be due to the nature of the subjects taught and studied by the senior secondary school teachers of science stream during their previous academic years which are more or less related to computer use. The senior secondary school teachers of science stream are already familiar to some extent with computer education and therefore, possessed low level of personal failure component of computer phobia. On the other hand, senior secondary school teachers of arts stream had studied the subjects in their previous academic years whose nature is entirely different from computer education. Hence, it is recommended that in in-service and pre-service teacher training programmes, the computer instructors and the teacher educators should provide more attention towards arts stream student-teachers while imparting computer-related knowledge and skills to them. They should try to encourage the student-teachers for maximum use of computer in teaching-learning process.

5 The findings of the study revealed that there existed no significant difference in computer phobia (component-wise as well as overall computer phobia) among senior secondary school teachers with respect to their locality. It is suggested that government should take more initiatives to provide computer related training in senior secondary schools of rural areas.

6 The results of the study also highlighted the non-existence of significant difference in computer phobia (component-wise as well

as overall computer phobia) among senior secondary school teachers with respect to their school type. However, teachers teaching in government schools should be provided with maximum facilities regarding computer use in teaching-learning process.

7 The findings of the study revealed that working with computer can lead to certain physical problems like; irritation in eyes, health issues, etc. For this, educational institutions, administrator need careful attention towards the careful use of computer and its use duration in the schools. The administrators and the teachers need to change their attitude towards using computer and computer phobia. For this purpose, special seminars, orientation programmes and workshops can be organized for improving their knowledge as well attitude towards computer phobia.

8 Teachers need to be prompted to make use of internet for updating their knowledge and general awareness. Individual training should be given through chat base online or web-based therapy which can develop in teachers a positive attitude towards web self-efficacy, perceive web enjoyment, and behavioral intention to use the web in order to remove the phobia. It is also highly suggested that teachers should be encouraged to use computers in order to decrease computer phobia.

9 It is observed from the study that teachers are more conscience to learn computer but due to lack of opportunities such as training, practice, and time create anxiety among teachers that increase computer phobia. On the basis of findings, it is recommended that computer training should be must for the teachers and increase the opportunities, support and computer facilities as well as computer-based teaching may reduce the computer phobia among teachers.

10 It is suggested to curriculum developers and policy makers that it also touches practical aspect of ICT so that computer skills can be developed among teachers as the life-long learning. Computer is becoming a part of modern life but computer phobia has become a challenge for integration of computer in education. Computer phobia can be reduced with the help of different orientation programmes. Teachers need to take initiatives to learn computer skills and knowledge to overcome computer phobia. Teachers should be motivated to prepare lesson plans with the help of the computer so that computer skills can be developed among them. More and more access and practical knowledge of computer operations should be provided to reduce computer phobia among teachers.

5.3 SUGGESTIONS FOR FURTHER RESEARCH

Research in any branch of human knowledge is never a closed chapter. There is always a need of finding solutions to new problems and testing a veracity of the solution to the older problems. Keeping in view the results of the present study, there appears a number of issues related to computer phobia among senior secondary school teachers. Hence, taking into consideration the delimitation of the study and findings of present investigation, certain suggestions are laid down for undertaking empirical studies in future:

1. Comparative studies may be carried out to compare the computer phobia of prospective secondary school teachers with in-service teachers so as to identify the causes of computer phobia and delineate the strategies for bringing improvements in the computer use, if any required.

2. Factors responsible for encouraging and / or discouraging teachers in making use of computers for imparting education in schools may be identified through empirical investigations.

3. This study may be conducted on post graduate teachers also. Similar study can be conducted on teachers at other levels of education with the help of constructed instruments according to their level.

4. The study may be conducted by taking sample from other districts of the state also.

5. Investigations may be carried out to study the students' perceptions regarding different aspects of computer phobia.

6. The impact of computer phobia on learning achievement of school teachers may be assessed through impact assessment studies.

7. The factors contributing towards explaining variance in the variables like; computer phobia or computer anxiety among teachers may be explored with the help of specially designed quantitative research studies.

8. The training needs of in-service elementary / secondary school teachers, especially with regard to pedagogical use of computers may be explored through specifically designed research studies which may further have implications for curriculum reform at pre-service teacher training level.

9. The research studies may be carried out at D. El. Ed. / JBT and B.Ed. level by adopting the conceptual and methodological framework of present investigation.

Chapter VI

Summary

CHAPTER VI

SUMMARY

Computer has revolutionized the education field. In the present progressive era having computer knowledge practically is too much necessary. But there are many persons who fear to perform on computer; this is known as computer phobia. There is no consensus in the literature on the use of the terms such as computer anxiety, computer phobia and technophobia. In the studies performed so far this subject has been handled under some titles, computer phobia, techno stress, cyberphobia, computer aversion, technophobia, and computer anxiety. Although technophobia is becoming a commonly used term, appearing in newspapers and popular magazines with increasing frequency, in a pioneering work, defined computer phobia as: (a) a resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about computers. Afterwards, technophobia has come to be known as computer phobia, and has been defined as: "(a) anxiety about present or future interactions with computers or computer related technology, (b) negative global attitudes about computers, and their operation or their societal impact; and/or, (c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction."

Computer phobia is an intense fear of something that possesses little of no danger. While people with computer phobia realize that these fears are irrational, they often find that facing or even thinking about facing the fear situation brings on a panic attack. One of the root causes of computer phobia is the rapidity of technological advance. In the present technological society, the impression is that artifacts such as computers are more valued than people. Thus,

computer phobia is a particularly striking example of the effects of the rapid growth of a technological society.

Teacher's work can be made easier and faster with computers. Computer enhanced instruction refers to using computer to bring additional dimensions to traditional teaching methods. This includes using computers to create instructional materials, slide shows, videotapes, worksheets, tests bulletin board material, rewards, incentives, games and display. It also includes using computer to increase personal productivity through grade book programs and way to find that instruction indeed enhanced. They are more productive, more organized because of the thought and planning required, and more efficient because of better record keeping. The learning environment is more appealing when materials are neatly and professionally generated. Finally, students generally have more positive impression for teachers when they use computer-based technology in the classroom.

Computer can be used as enabling tools for all students including students with special needs. Students who have difficulty with writing, spelling, mathematics, organization and sequencing find that computers make these tasks easier. We can use applications such as word processing programs, spreadsheets, and graphics programs as instructional tools. Such applications may help students to overcome programs that interfere with learning.

In the teaching-learning process, evolution of computer has passed through many stages. Application of computers in education has been identified by different authors and has been named i.e. computer-based education and Computer Aided Instruction.

Now a day's computer has become important part and parcel of our life. Almost all our daily activities one way or the other are associated with computer. Almost everyone is having a personal computer in their homes and only a minimum percentage of them are

regularly using it. Many of them are rarely using computers due to many reasons and one such reason may be their fear towards using the computer. Computers are increasingly influencing many aspects of our existence from our school life to our work environment, as well as many of our leisure activities. As more tasks involve human-computer interaction, computer literacy should become more and more positively correlated with both occupational and personal successes. Information technology has made a considerable impact upon almost every aspect of society. A working familiarity with IT is becoming increasingly important, particularly in business and educational contexts. The computer is neither a mere machine or hardware nor a human system or a software. But it is a combination of all these. Computer plays an important role in teleconference to share ideas, data bases to provide information, desk top publishing etc. with the optimum use of technology we can solve educational problems whether related with managements or with learning and administration at a proper time. Hence, computer has touched the life of all individual whether directly or indirectly. Computer is used for fulfilling the purpose of education, management, information and as well an entertainment. Due to which the craze for computer is increasing day by day. By an estimate between 8 and 10 billion work hours are wasted annually by inexperienced or fearful employees fretting over computer tasks. Curing computer phobia or fear of computer is too much needed. Keeping this in a view it is the responsibility of the teachers to introduce the students with new technology and make them aware. It is too much necessary for them to have practical knowledge of computer because the scope of computer in each and every field of life is rapidly increasing day by day. It saves time and money over the long term.

If the teachers don't have computer's knowledge then they can't survive in the present technological and progressive society. But it is a very serious matter that there are many computer phobic teachers

who have fear of computer. They freeze up when they asked to perform a new task on the computer. Such types of computer phobic teachers are present in our schools.

In this era of technological advancement, computer education is considered to be an essential ingredient of education. But computer phobia of a teacher is an important factor in determining his progress and also his student, in the field of education. Therefore, it is a felt need to study the computer phobia of teachers. There is lack of researches in the area of computer phobia among teachers teaching in senior secondary schools of Himachal Pradesh. The results of present study will be of immense help for teachers as well as for administrators. Keeping into consideration the above facts, present work was undertaken by the investigator.

"COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS AS RELATED TO CERTAIN SOCIO-PERSONAL AND ACADEMIC VARIABLES"

Objectives of the Study

The study was conducted to achieve the following objectives:

1. To study computer phobia among senior secondary school teachers.

2. To study gender-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity
iii. Convenience

3. To study marital status-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure
ii. Human Vs. Machine Ambiguity

iii. Convenience

4. To study stream-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

5. To study locality-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

6. To study school-wise difference in following components as well as overall computer phobia among senior secondary school teachers:

i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

7. To study the different causes/reasons of computer phobia among senior secondary school teachers.

8. To find out the various remedial suggestions for the reduction of computer phobia among senior secondary school teachers.

Hypotheses of the Study

In the present study following hypotheses were formulated:

1. There will be no significant gender-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

2. There will be no significant marital status-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

3. There will be no significant stream-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

4. There will be no significant locality-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

5. There will be no significant school-wise difference in following components as well as overall computer phobia among senior secondary school teachers:
   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

Delimitations of the Study

1. The sample of the present study included only senior secondary school teachers teaching in government and private schools of Himachal Pradesh.

2. The study was confined to government and private schools of two districts (Mandi and Kullu) of Himachal Pradesh.

3. The present study was restricted to two variables i.e., computer phobia as dependent variable and gender, marital status, stream, locality and school type as independent variables.

4. The study was confined to a sample of 375 senior secondary school teachers.

Operational Definition of Terms Used

1. **Computer Phobia:** Computer phobia is a fear or dislike of advanced technology. It invokes a wide range of negative emotions, such as anxiety, incompetence, fear, stress and nervousness. It not only creates psychological imbalances but shifts human nature from reality. In the present study the level of computer phobia among teachers was assessed by 'Computer Phobia Scale' developed and standardized by Dr. S. Rajasekar and Dr. P. Vaiyapuri Raja (2018).

2. **Senior Secondary School Teachers:** It refers to the teachers teaching in government and private senior secondary schools of district Mandi and Kullu of Himachal Pradesh.

3. **Socio-Personal Variables:** In the present study, socio-personal variables refer to gender, marital status and locality.

4. **Academic Variables:** In the present study, academic variables included stream and type of school.

Research Method Used

To carry out any type of research, the researcher must gather data with which to test the hypotheses or answers to the questions. Many different methods and procedures have been developed to aid in the acquisition of data.

Descriptive survey method is designed to obtain pertinent and precise information concerning the current status of phenomena and whenever possible to draw valid general conclusion from the facts discovered. Descriptive research involves events that present

condition. It aims to describe "what exists" with respect to variables or conditions in a situation. Descriptive research method is most popular and widely used research method in education. Due to its popularity, importance and directness, the researcher can gather information in terms of individual opinion about some issues by simple questionnaire. The researcher in the present study has used the descriptive method as a research method.

Research Approach Followed

There are two main approaches for scientific study of any phenomenon or problem in hand. The adoption of a particular research approach depends upon the kinds of data gathered. As the data in the present study were collected by administering questionnaire and scale etc. it was considered worthwhile to employ both qualitative as well as quantitative research approaches for realizing the study objectives.

Qualitative research is, "the systematic collection, organization, and interpretation of textual material derived from talk or conversation. It is used in the exploration of meanings of social phenomena as experienced by individuals themselves, in their natural context". It refers to any social science study that produces results which are not obtained by statistical procedures or other methods of quantification.

Apart from this, quantitative research approach was also employed in the present investigation to achieve study objectives. Quantitative research is the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect. This approach uses 'measurement' as most precise and universally accepted method for assigning quantitative values to the characteristics or properties of objects or events for the purpose of discovering relationships between variables under study. Thus,

quantitative research approach was also employed in the present study.

Finally, it may be summed up that in order to realize the objectives of present study; both qualitative and quantitative research approaches were employed. In addition, qualitative and quantitative data obtained from respondents through different research tools.

Variables of the Study

Variables are the conditions or characteristics that the researcher manipulates, controls or observes. The independent variables are the conditions or characteristics that the researcher manipulates or controls in his/her attempt to ascertain their relationship to observed phenomena. The dependent variables are the conditions or characteristics that appear, disappear or change as the researcher introduces, removes or changes the magnitude of independent variables.

In the present investigation, following variables were taken as independent variables:

(i) Gender
(ii) Marital status
(iii) Stream
(iv) Locality
(v) School Type

Gender variable was considered of having two types i.e. male and female, variable marital status (married and unmarried), variable stream (arts and science), variable locality (rural and urban) and school type (govt. and private) etc.

Population and Sampling

The primary purpose of research is to discover principles that have universal application but to study the entire population to arrive at generalizations would be impractical, if not impossible. Researchers

rarely survey the entire population for two reasons: the cost is too higher and the population is dynamic in that the individual making up the population may change over time. Sampling is done to overcome this difficulty. Sampling is the process of selecting a number of individuals from a population preferably in such a way that the individual selected represent the larger group from which they were selected. The sample drawn out of the population should be true representative of the population otherwise; the results of study may turn to be futile. Most of the educational phenomena consist of a large number of units. It would be impractical, if not impossible; to test, to interview or observe each unit of the population under controlled conditions in order to arrive at principles having universal validity.

Some populations are so large that their study would be expansive in terms of time, money, efforts and manpower. Sampling is one of the most important and indispensable factor of every research study. Sampling is a process by which relatively small number of individuals, objects or events is selected and analyzed in order to find out something about the target population from which the representative sample was selected. Sampling has been increasingly used in educational research for answering certain questions about a specific population. The sample drawn out of population should be true representative of the population otherwise; the results of the study may turn to be futile.

In the present investigation, the sampling was carried out in different phases. The present research study was delimited to two districts of Himachal Pradesh i.e. Kullu and Mandi. An effort has been made by the investigator to select an adequate and representative sample of senior secondary school teachers from these two districts of Himachal Pradesh. The details of sampling procedures employed in this study are given as under:

Selection of Districts

At the first stage, the selection of districts was made. For taking the decision regarding number of districts to be selected from the targeted population, lottery method was employed. On applying this method, two districts i.e. Kullu and Mandi from Himachal Pradesh were included in the sample of present investigation.

Selection of Educational Blocks

At the second stage, the lists of educational blocks of two selected districts were procured and a total of 4 educational blocks each 2 educational blocks (from each two selected districts) were selected by employing random sampling technique. The selection of a particular number of educational blocks from each single district was made by employing lottery method. After making the decision regarding number of educational blocks from each particular district, the lottery method was again employed to identify the names of educational blocks to be included in the sample of the study.

Selection of Senior Secondary Schools

At the third stage, the selection of schools from sampled educational blocks of two districts was made by adopting convenient sampling technique. The schools which were easily accessible, connected with transportable road facility in particular district were selected by the investigator for the purpose of data collection. Thus, a total of 26 schools were chosen in the present study.

Selection of Senior Secondary School Teachers

In order to study the views and perception of senior secondary school teachers regarding various aspects of computer phobia, selection of senior secondary school teachers was made from two selected districts. The selection of teachers was made by employing incidental sampling technique and the teachers who were willing to provide the requisite information were taken into consideration in the present study. Initially, a total of 196 male teachers and 106 female teachers were selected. However, at the time of scrutiny of data,

different research tools filled by 11 male teachers and 16 female teachers were found to be incomplete and hence, 185 male teachers and 190 female teachers constituted final sample of teachers for the present study.

Research Tool Used

The selection of suitable tools is of vital importance for successful research. Keeping this in view, following research tool was considered most appropriate by the researcher for measuring the computer phobia among senior secondary school teachers:

Computer Phobia Scale by S. Rajasekar and P. Vaiyapuri Raja (2018)

Presently computer has become part and parcel of our life. Almost all our daily activities in one way or the other are associated with computers. Almost everyone is having a personal computer in their homes and only a minimum percentage of them are regularly using it. Many of them are rarely using computers due to a number of reasons and one such reason may be their fear towards using the computer. Even many of the teachers have this irrational fear towards computers. This irrational fear towards computer is known as "computer phobia". If a teacher is free from computer anxiety, then he can make use of computers during their teaching process without any inhibitions. For measuring computer phoia among senior secondary school teachers, 'Computer Phobia Scale' by S. Rajasekar and P. Vaiyapuri Raja (2018) was used. As per the authors of the scale, phobia is the feeling of unease, worrying and apprehension, which becomes a disorder when it disrupts the daily routine of the individual. On the other hand, phobia is an excessive fear of certain objects and situations. According to the authors of the scale, this scale can be used to measure anxiety as well as phobia towards various aspects of computer including its use. In order to develop this scale, the authors have collected variety of statements pertaining to computer phobia / anxiety from various sources like internet search,

journals, books, experts in the field of computer education and educational psychology and also from teachers who are handling educational technology, computer education and educational psychology as subjects in B. Ed. and M. Ed. courses in colleges and in universities. After having collected the statements from such sources, the authors have finalized 30 statements grouped under the following three dimensions viz.

- **Personal Failure-** Anxiety about present or future interactions with computers or computer-related technology.
- **Human vs. Machine Ambiguity-** Negative global attitudes about computers, their operations, or their societal impact.
- **Convenience-** Specific negative sentiments or self-critical dialogues design, actual computer interactions or when contemplating future computer interaction.

The dimension personal failure constitutes 12 statements; the dimension human vs. machine ambiguity constitutes 9 statements and the dimension convenience constitutes 9 statements. Thus, this scale consists of 30 statements of which 8 were positive statements and the remaining 22 were negative statements. Each statement is set against five-point scale of "Strongly Agree", "Agree", "Undecided", "Disagree", "Strongly Disagree" and weight of 4, 3, 2, 1 and 0 are given in that order for the positive statements and the scoring is reversed for the negative statements. An individual score is the sum of all the scores of the 30 items. The scores in this scale range from 0 to 120 in the direction of the high phobic or anxious to low phobic or anxious.

Try-out of the Scale

For the pilot study, the scale was administered to the sample of 160 teachers working in the higher secondary schools of Cuddalore district, Tamilnadu who were selected through cluster sampling technique. Then, their responses were scored carefully and based on the marks secured, all the papers were arranged in the descending

order from the highest scorer to the lowest scorer. Then, they were subjected to item analysis. On the basis of item analysis, t-value for each statement was computed. The value of 't' is a measure of the extent to which a given statement differentiates between high and low groups. If the 't' value is equal to or greater than 1.75, it indicates that the average response of the high and low groups to a statement differs significantly." As many as 29 statements having 't' value greater than or equal to 1.75 were chosen in order to form the final scale. This final scale was administered to 650 teachers working in higher secondary schools of Cuddalore district, Tamilnadu, chosen through cluster sampling technique. Based on the normal probability curve, the scores got from all the 650 teachers were categorized into five groups and based on this; the final scoring procedure was evolved.

Scoring Procedure

The scale has as many as 8 positive and 21 negative statements. An individual score is the sum of the scores of all 29 items. The description of nature of items and serial number of items in Computer Phobia Scale along with areas is given in Table:

Area-wise Description of Nature of Items and Serial number of Items in Computer Phobia Scale

Sr. No.	**Areas of Computer Phobia**	**Item No.**	**Nature of Items**		**Total Items**
			Positive	**Negative**	
1.	Personal Failure	1,2,4,8,9,10,11, 12,13,14,15*,24	01	11	12
2.	Human Vs. Machine Ambiguity	16,17,18*,19*, 22,23,25,26	02	06	8
3.	Convenience	3*,5*,6*,7*,20, 21,27,28*,29	05	04	09
Total	**Three Areas**	**29 Items**	**08**	**21**	**29**

The score on final scale ranges from 0 to 116. Higher score indicates low computer phobia / anxiety and vice-versa. The norms for interpreting scores obtained on computer phobia scale are given in following Table:

Obtained Score	Interpretation
0-14	Very High Computer Phobia / Anxiety
15-36	High Computer Phobia / Anxiety
37-79	Neutral
80-101	Low Computer Phobia / Anxiety
102-116	Very Low Computer Phobia / Anxiety

Computer phobia scale has construct validity as items were selected having the 't' values equal to or more than 1.75 (Edwards, 1957). Its intrinsic validity was found to be 0.94 which clearly states that the scale is valid. The reliability of computer phobia scale was established by the split-half method (odd-even numbered) using Pearson product moment correlation. After applying Spearman-Brown prophecy formula, the reliability index was found to be 0.88 which is high and therefore the scale is reliable.

Questionnaire for Senior Secondary School Teachers

In order to seek the views of senior secondary school teachers regarding different aspects of computer phobia, a questionnaire was specifically developed. This questionnaire was structured in nature consisting of both closed-ended and open-ended questions. In the initial draft of the questionnaire, 14 items were framed. The items of the questionnaire were written in English language by taking into cognizance the nature of sample of senior secondary school teachers for whom this questionnaire was meant. There were a total of 9 items in the final form of questionnaire which dealt with seeking views of teachers regarding feel anxious when you try to learn technology related skills, being to use computer, become dependent upon them and feel insecure about to use of computer etc.

Validation of questionnaire for senior secondary school teachers

The validation of questionnaire for senior secondary school teachers was validated in terms of its content validity by seeking expert opinion and suggestions. For this, the items of the questionnaire were discussed with the teacher educators, researchers and faculty members of the School of Education, Abhilashi University, Chail Chowk Mandi. First of all, the purpose of the study was made clear to them and they were requested to critically evaluate each item of the questionnaire in terms of its clarity, accuracy, logic and relevance to the objectives of the study. The investigator personally discussed each item with experts and the comments and suggestions given by them were taken into consideration for giving a final shape to the questionnaire. In the light of their valuable comments and suggestions, certain items in the questionnaire were revised. Apart from this, the help of the language experts was also sought by the investigator to remove linguistic ambiguity in the items.

Research Design

The design of present investigation included following three phases:

Phase 1

During the first phase, review of the theoretical and research literature related to computer phobia was carried out.

Phase 2

During the second phase, field survey was carried out by the investigator to collect requisite data for the present study. The details in this regard are given in next section of this Chapter.

Phase 3

The final phase of the research study was characterized with scoring of research tools, data organization and tabulation, its analysis and interpretation and report writing.

Data Collection

The investigator collected data personally during school hours. The tools were prepared beforehand and required numbers of Xerox copies were obtained. The investigator sought the co-operation of the principal of schools and teachers. Firstly, the researcher introduced her to the teachers and established rapport with them. The researcher distributed computer phobia scale to the senior secondary school teachers. The teachers were asked to put a tick mark (√) in the category which they think to be the most appropriate for each statement. For completion of the scale, about 15-20 minutes were taken by them. The filled copies of the scale were collected back from the senior secondary school teachers by the investigator.

At the next stage, data were collected again from the senior secondary school teachers by administering questionnaire specifically developed to seek their views regarding computer phobia among them. The filled questionnaire was collected from the teachers at its completion. The researcher thanked all the respondents and school authorities for their cooperation.

Scoring Procedure

Following scoring procedure was followed in respect of different research instruments in the present investigation:

- **Computer Phobia Scale**

  In this scale, each statement is set against five points ranging from "Strongly Agree", "Agree", "Undecided", "Disagree" to "Strongly Disagree" and weight of 4, 3, 2, 1 and 0 are given in that order for the positive statements and the scoring is completely reversed for the negative statements.

- **Questionnaire for Senior Secondary School Teachers**

  The frequency count and percentage analysis were used to classify the responses of senior secondary school teachers on

each structured question. In case of responses on open-ended questions, the technique of 'content analysis' was applied.

Analysis of Data

For achieving the objectives of the present investigation, the data were analysed by employing the following techniques: -

In case of quantitative data, the data obtained from senior secondary school teachers, descriptive statistics were computed. For comparing gender-wise, marital status-wise, stream-wise, locality-wise and school-wise significant differences, inferential statistical technique i.e. t-test was applied.

Similarly, the data obtained from teachers with the help of the questionnaire were analysed by employing content analysis technique along with inductive and logical analysis. Frequency count and percentage analysis was applied in case of close-ended questions.

Conclusions

On the basis of analysis of data and interpretation of findings, following conclusions were drawn:

1 The mean computer phobia score was found to be 75.64 (out of 116) with a S.D. of 13.857. A very less (4.53%) senior secondary school teachers possessed low computer phobia (scores from 102 to 115). Further, a few teachers (11.20%) had shown below average computer phobia (scores from 89 to 101). On the other hand, somewhat less than two third (67.20%) senior secondary school teachers reflected average level of computer phobia (score from 62 to 88) and few teachers (15.20%) had reflected above average level of computer phobia (score from 49 to 61). Almost negligible teachers (1.87%) possessed high computer phobia (score of 48 and below).

2 (i) There existed no significant gender-wise difference in personal failure among senior secondary school teachers.

(ii) There existed no significant gender-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant gender-wise difference in convenience among senior secondary school teachers.

(iv) There existed no significant gender-wise difference in overall computer phobia among senior secondary school teachers.

3 (i) There existed significant difference in personal failure among senior secondary school teachers with respect to their marital status. Hence, it may be interpreted that the married and unmarried senior secondary school teachers differed significantly with respect their personal failure. Unmarried senior secondary school teachers possessed low level of personal failure as compared to married senior secondary school teachers.

(ii) There existed no significant difference in human vs machine ambiguity among senior secondary school teachers with respect to their marital status.

(iii) There existed no significant difference in convenience among senior secondary school teachers with respect to their marital status.

(iv) There existed no significant difference in overall computer phobia among senior secondary school teachers with respect to their marital status.

3 (i) There existed significant stream-wise difference in personal failure among senior secondary school teachers. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differed significantly with respect to personal failure. Senior secondary school teachers of

science stream possessed low level of personal failure as compared to senior secondary school teachers of arts stream.

(ii) There existed no significant stream-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant stream-wise difference in convenience among senior secondary school teachers.

(iv) There existed significant stream-wise difference in overall computer phobia among senior secondary school teachers. Hence, it may be interpreted that the senior secondary school teachers of arts and science stream differ significantly with respect to their overall computer phobia. Senior secondary school teachers of science stream possessed low level of overall computer phobia as compared to senior secondary school teachers of arts stream.

4 (i) There existed no significant locality-wise difference in personal failure among senior secondary school teachers.

(ii) There existed no significant locality-wise difference in human vs machine ambiguity among senior secondary school teachers.

(iii) There existed no significant locality-wise difference in convenience among senior secondary school teachers.

(iv) There existed no significant locality-wise difference in overall computer phobia among senior secondary school teachers.

5 (i) There existed no significant difference in personal failure among senior secondary school teachers with respect to their type of school.

(ii) There existed no significant difference in human vs machine ambiguity among senior secondary school teachers with respect to their type of school.

(iii) There existed no significant difference in convenience among senior secondary school teachers with respect to their type of school.

(iv) There existed no significant difference in overall computer phobia among senior secondary school teachers with respect to their type of school.

6 A majority of senior secondary school teachers (56%) lamented that they do not feel insecure about their ability to use computer for institution, although 44% teachers were of entirely different opinion in this regard. Further, a majority of teachers (59%) also pointed out that the learning to operate computer is like learning a new skill, as we practice more, we learn more and 41% teachers refused in this regard. A good majority of senior secondary school teachers (76%) were of the view that they are not afraid to use computer as they will become dependent upon them. On the other hand, 24% teachers agreed that they begin to use computer, they will become dependent upon them. The effects of using more computers included; (i) create visual problems (38.89%), (ii) create health issues (30%), (iii) to become lazy (20%). A majority of teachers (50.4%) thought that there may be destruction of a large amount of information by hitting a wrong beg but 49.6% teachers disagreed in this regard**.** Further, a good majority of teachers (62.1%) refused to have any fear of making mistakes that cannot be corrected, although 37.9% teachers were agreed with this statement. A large majority of teachers (70.1%) refused that the computer is complicated to use during work. On the other hand, a few teachers (29.9%) accepted the use of computer is complicated during work. A majority of teachers (75.7%) wanted to learn more about computer, whereas 25.3% teachers refused in this regard. Further, a good majority of teachers (83.5%) agreed that computers are faster than the teachers whereas very few

(16.5%) teachers disagreed regarding this statement. In addition to this, majority of teachers (57.6%) refused that they feel anxious when they try to learn technology related skills. However, there were 42.4% teachers who have expressed their acceptance in this regard.

7 The different causes / reasons of computer phobia among senior secondary school teachers included; (i) lack of technology-related skills to operate the computer (44.53%), (ii) lack of opportunities to use computer in theory classes (39.47%), (iii) lack of confidence (36%), (iv) lack of computer knowledge (32%), (v) lack of practice (29.87%), (vi) fear of making mistakes while using computer (28.8%), (vii) lack of sufficient time during classes (26.13%), and (vii) Inadequate ICT facilities (18.13%).

8 The major suggestions given by teachers for reducing computer phobia among senior secondary school teachers included; (i) to reduce workload of teachers (52.8%), (ii) Orientation programme, workshops and seminars should be organized (49.07%), (iii) focus on maximum use of ICT in Teacher Training programmes (44.8%), (iv) use of computer education should be mandatory in teacher training programme (44%), (v) make computer education as a compulsory subject in curriculum (41.87%), (vi) providing awareness campaign regarding use of technology among teachers (39.45%), (vii) organization of faculty development programme for Teachers (37.87%), (viii) emphasis on technology-related skills to operate computer (32%), and (ix) counselling programmes for the teachers to reduce fear of using computer

Educational Implications

The journey of a researcher does not end with merely producing the results of a study. In fact, it is the beginning where the researcher

should think of the practical applications of the research findings. The relevance of any research study is entirely dependent on its practical utility for the practitioners and all those who are concerned with the area on which the study was carried out. Against these parameters, the present study may termed to have much relevance and utilitarian value as it has following implications to bring improvements in senior secondary school environment so as to enhance computer knowledge and reduce computer phobia among senior secondary school teachers. Hence, in the light of major findings of the present study, following implications got emerged:

1 The findings of the study revealed that the senior secondary school teachers possessed average level of computer phobia. Therefore, it is imperative that the teachers should make aware about use of computer so that they may further reduce the fear of making mistakes regarding use of computer. It is suggested that more opportunities should be given to the teachers for using computers in various tasks assigned. The teachers should be given adequate freedom for access to computers and making their frequent use in different tasks like assignments, projects, lesson planning, TLM preparation etc. The greater access and exposure to computers may finally lead towards enhancing efficacy beliefs and lowering of computer-related phobia among senior secondary school teachers.

2 The non-existence of significant difference in computer phobia (component-wise i.e. personal failure, human vs machine ambiguity, convenience and overall computer phobia) with respect to their gender. However, it is recommended that there should be efforts to remove the fear of computer from teachers' mind and try to make them understand that it is not difficult to work on it. Teachers should be given sufficient time to do practical work on computers. Appropriate guidance should be provided to remove the computer anxiety among teachers. The

appropriate knowledge and skills relevant to the present day needs of schools and the industry be imparted to the senior secondary school teachers in an effective manner so that they can fit perfectly into the profession in near future.

3 The findings of the study revealed the non-existence of significant difference in computer phobia (component-wise i.e. human vs machine ambiguity, convenience and overall computer phobia) with respect to their marital-status. However, the results also revealed the significant difference in the personal failure aspect of computer phobia among senior secondary school teachers. In order to reduce computer phobia among senior secondary school teachers, the teachers should make proper use of computer and they should be continuously motivated to use of computer without any fear. For removing the phobia about present or future interactions with computers or computer related technology married teachers have to devote more time with working on computers daily.

4 The senior secondary school teachers belonging to science stream possessed significantly low level of personal failure and overall computer phobia in comparison to the senior secondary school teachers of arts stream. This may be due to the nature of the subjects taught and studied by the senior secondary school teachers of science stream during their previous academic years which are more or less related to computer use. The senior secondary school teachers of science stream are already familiar to some extent with computer education and therefore, possessed low level of personal failure component of computer phobia. On the other hand, senior secondary school teachers of arts stream had studied the subjects in their previous academic years whose nature is entirely different from computer education. Hence, it is recommended that in in-service and pre-service teacher training programmes, the computer instructors

and the teacher educators should provide more attention towards arts stream student-teachers while imparting computer-related knowledge and skills to them. They should try to encourage the student-teachers for maximum use of computer in teaching-learning process.

5 The findings of the study revealed that there existed no significant difference in computer phobia (component-wise as well as overall computer phobia) among senior secondary school teachers with respect to their locality. It is suggested that government should take more initiatives to provide computer related training in senior secondary schools of rural areas.

6 The results of the study also highlighted the non-existence of significant difference in computer phobia (component-wise as well as overall computer phobia) among senior secondary school teachers with respect to their school type. However, teachers teaching in government schools should be provided with maximum facilities regarding computer use in teaching-learning process.

7 The findings of the study revealed that working with computer can lead to certain physical problems like; irritation in eyes, health issues, etc. For this, educational institutions, administrator need careful attention towards the careful use of computer and its use duration in the schools. The administrators and the teachers need to change their attitude towards using computer and computer phobia. For this purpose, special seminars, orientation programmes and workshops can be organized for improving their knowledge as well attitude towards computer phobia.

8 Teachers need to be prompted to make use of internet for updating their knowledge and general awareness. Individual training should be given through chat base online or web-based

therapy which can develop in teachers a positive attitude towards web self-efficacy, perceive web enjoyment, and behavioral intention to use the web in order to remove the phobia. It is also highly suggested that teachers should be encouraged to use computers in order to decrease computer phobia.

9 It is observed from the study that teachers are more conscience to learn computer but due to lack of opportunities such as training, practice, and time create anxiety among teachers that increase computer phobia. On the basis of findings, it is recommended that computer training should be must for the teachers and increase the opportunities, support and computer facilities as well as computer-based teaching may reduce the computer phobia among teachers.

10 It is suggested to curriculum developers and policy makers that it also touches practical aspect of ICT so that computer skills can be developed among teachers as the life-long learning. Computer is becoming a part of modern life but computer phobia has become a challenge for integration of computer in education. Computer phobia can be reduced with the help of different orientation programmes. Teachers need to take initiatives to learn computer skills and knowledge to overcome computer phobia. Teachers should be motivated to prepare lesson plans with the help of the computer so that computer skills can be developed among them. More and more access and practical knowledge of computer operations should be provided to reduce computer phobia among teachers.

Suggestions for Further Research

Research in any branch of human knowledge is never a closed chapter. There is always a need of finding solutions to new problems and testing a veracity of the solution to the older problems. Keeping in

view the results of the present study, there appears a number of issues related to computer phobia among senior secondary school teachers. Hence, taking into consideration the delimitation of the study and findings of present investigation, certain suggestions are laid down for undertaking empirical studies in future:

1. Comparative studies may be carried out to compare the computer phobia of prospective secondary school teachers with in-service teachers so as to identify the causes of computer phobia and delineate the strategies for bringing improvements in the computer use, if any required.
2. Factors responsible for encouraging and / or discouraging teachers in making use of computers for imparting education in schools may be identified through empirical investigations.
3. This study may be conducted on post graduate teachers also. Similar study can be conducted on teachers at other levels of education with the help of constructed instruments according to their level.
4. The study may be conducted by taking sample from other districts of the state also.
5. Investigations may be carried out to study the students' perceptions regarding different aspects of computer phobia.
6. The impact of computer phobia on learning achievement of school teachers may be assessed through impact assessment studies.
7. The factors contributing towards explaining variance in the variables like; computer phobia or computer anxiety among teachers may be explored with the help of specially designed quantitative research studies.
8. The training needs of in-service elementary / secondary school teachers, especially with regard to pedagogical use of computers may be explored through specifically designed research studies

which may further have implications for curriculum reform at pre-service teacher training level.

9. The research studies may be carried out at D. El. Ed. / JBT and B.Ed. level by adopting the conceptual and methodological framework of present investigation.

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Appendices

APPENDIX-I

Dr. S. Rajasekar *(Annamalainagar)*
Dr. P. Vaiyapuri Raja *(Kumbakonam)*

Consumable Booklet
of
C P S-RR
(English Version)

Please fill up the following information :—

Name of the Teacher _____
Gender : Masculine / Feminine _____
Locality of the School : Urban / Rural _____
Type of the School : Government / Private _____
Marital Status : Married / Unmarried _____
Teaching Subject : Science / Arts _____
Type of Family : Joint / Nuclear _____
Designation : Secondary Grade / Graduate / Post Graduate _____
Age : Upto 30 years/above 30 years/upto 50 years/ above 50 years _____
Date _____

INSTRUCTIONS

This scale consists of 29 statements and it provides five columns bearing the headings **Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (DA)** and **Strongly Disagree (SD)** against the statements. Read each statement carefully and place a tick mark ☑ against it in the appropriate column. You are requested to give responses to all the statements. There is no time limit but you have to give the answers immediately.

SCORING TABLE

Pages	2	3	4	Total Score	Interpretation
Raw Score					

M A N A S V I
UG–1, Nirmal Height Market, Mathura Road, AGRA–282 007

Sr. No.	STATEMENTS	RESPONSES					SCORE
		Strongly Agree	Agree	Un-decided	Dis-agree	Strongly Disagree	
• 1.	I feel inadequate about my ability to use computers.	☐	☐	☐	☐	☐	⬭
• 2.	Thinking about computer makes me nervous.	☐	☐	☐	☐	☐	⬭
3.	I feel comfortable when using computers.	☐	☐	☐	☐	☐	⬭
• 4.	Computers discourage me through fear.	☐	☐	☐	☐	☐	⬭
5.	I feel contented when I am working on a computer.	☐	☐	☐	☐	☐	⬭
6.	I think that computers are so convenient.	☐	☐	☐	☐	☐	⬭
7.	Computers make our day-to-day work easier.	☐	☐	☐	☐	☐	⬭
• 8.	I worry about making mistakes when using computers.	☐	☐	☐	☐	☐	⬭
• 9.	I feel frustrated when I use computers.	☐	☐	☐	☐	☐	⬭
• 10.	Computers agitate me.	☐	☐	☐	☐	☐	⬭
						TOTAL SCORE	☐

Sr. No.	STATEMENTS	RESPONSES					SCORE
		Strongly Agree	Agree	Un-decided	Dis-agree	Strongly Disagree	
• 11.	I think most people know how to use computers better than I.	☐	☐	☐	☐	☐	⬭
• 12.	I feel tensed when I approach computer.	☐	☐	☐	☐	☐	⬭
• 13.	I get irritated while using new software in computer.	☐	☐	☐	☐	☐	⬭
• 14.	I avoid talking about or thinking of computers.	☐	☐	☐	☐	☐	⬭
15.	I have no fear of computers.	☐	☐	☐	☐	☐	⬭
• 16.	I am afraid of using computers due to the fear of breaking them.	☐	☐	☐	☐	☐	⬭
• 17.	I feel more confident doing a work manually than on computers.	☐	☐	☐	☐	☐	⬭
18.	I feel confident that I could teach someone how to use computers.	☐	☐	☐	☐	☐	⬭
19.	It is easy to learn how to use computers.	☐	☐	☐	☐	☐	⬭
• 20.	I feel bitter that computers are becoming indispensable in our daily lives.	☐	☐	☐	☐	☐	⬭
						TOTAL SCORE	☐

Sr. No.	STATEMENTS	RESPONSES					SCORE
		Strongly Agree	Agree	Un-decided	Dis-agree	Strongly Disagree	
•21.	I find commands used in computers confusing.	☐	☐	☐	☐	☐	⬭
•22.	I prefer to do work manually than to use computer.	☐	☐	☐	☐	☐	⬭
•23.	I feel that computers dominate us.	☐	☐	☐	☐	☐	⬭
•24.	Computers make things too complicated.	☐	☐	☐	☐	☐	⬭
•25.	I think that computers will ruin the society.	☐	☐	☐	☐	☐	⬭
•26.	I feel that computers will create unemployment problem.	☐	☐	☐	☐	☐	⬭
•27.	It takes me a long time to complete my work through computers.	☐	☐	☐	☐	☐	⬭
28.	I want to learn more about using computers.	☐	☐	☐	☐	☐	⬭
•29.	Computers seem to be very complicated during work.	☐	☐	☐	☐	☐	⬭
						TOTAL SCORE	☐

- Negative Items

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Consumable Booklet of Computer Phobia Scale CPS–RR (English Version)

APPENDIX-II

QUESTIONNAIRE FOR TEACHERS

General Information:

Name (optional)

Gender: Marital Status: Married/ Unmarried

Type of School: Govt./ Private Name of Educational Block

Name of Educational Distt.

Respected Sir,

In this questionnaire, there are certain questions that are related to computer phobia among school teachers. Read each question carefully and try to answer the questions. Your answers will be kept secret and will not be shown to anyone. This data will be used for research purpose only.

Supervisor

Dr. Promila

Investigator

Neelam Kumari

SCHOOL OF EDUCATION

FACULTY OF EDUCATION, BASIC SCIENCES AND HUMANITIES

ABHILASHI UNIVERSITY

CHAIL CHOWK, MANDI (H.P.)-175028

1) Do you feel insecure about your ability to use a computer for institution?

Yes ☐ No ☐

2) Do you think that learning to operate computer is like learning any new skill the more you practice, better you become?

Yes ☐ No ☐

3) Are you afraid that if you being to use computer, you will become dependent upon them? Yes ☐ No ☐

If yes, then why?

---

4) Do you think that, there may be destruction of a large amount of information by hitting a wrong beg?

Yes ☐ No ☐

5) Are you afraid to use a computer for fear of making mistakes that you cannot, correct?

Yes ☐ No ☐

6) Do you think that computers are complicated to use during work?

Yes ☐ No ☐

7) Do you want to learn more about computer?

Yes ☐ No ☐

8) Do you feel that computers are faster than you?

Yes ☐ No ☐ ☐

9) Do you feel anxious when you try to learn technology related skills?

Yes ☐ No ☐

10) What are the reasons/ causes behind computer phobia among senior secondary school teachers?

---

11) What suggestions would you like to give to reduce computer phobia among senior secondary school teachers?

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COMPUTER PHOBIA AMONG SENIOR SECONDARY SCHOOL TEACHERS AS RELATED TO THERIR GENDER

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Abstract

In the present study investigator investigate the computer phobia of senior secondary school teacher teaching in senior secondary school in Himachal Pradesh for this investigation The sample included only school teachers teaching in senior secondary schools of Mandi and Kullu Disttt. of Himachal Pradesh. The study was confined to a sample of 400 teachers. The study was restricted to two variables i.e. computer phobia as dependent variable and gender, independent variables. In the present study Computer Phobia Scale constructed and standardized by Dr. Rajasekar and Dr. Vaiyapuri Raja was used by the researcher. Statistics is a mathematical technique or process of gathering, describing, organizing, analysis and interpreting numerical data. The statistical techniques are used to give meaningful and consider picture of the whole data so that it could be easily comprehended. It is employed to test the hypotheses in the study. In order to study the distribution of computer phobia scores of secondary school teachers, descriptive statistics like mean, median, mode, S.D. ,Q.D., skewness and kurtosis was used. For studying the gender-wise, significance of the difference in the computer phobia among school teachers teaching in senior secondary schools, t-test was used and the investigator find that their was no significant difference in the mean scores of overall computer phobia of male and female school teachers teaching in senior secondary schools.

Introduction

Computer has become part and parcel of our life. Almost all our daily activities one way or the other are associated with computer. Almost everyone is having a personal computer in their homes and only a minimum percentage of them are regularly using it. Many of them are rarely using computers due to many reasons and one such reason may be their fear towards using the computer. By and large unknowingly have an irrational fear over this electronic machine and hence they keep the computers as their status symbol. Even many of the teachers have this irrational fear towards computers. This irrational fear towards computer is known as "computer phobia". If a teacher is free from

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computer phobia, then he can make use of computers during their teaching process without any inhibitions. Computer has revolutionized the education field. In the present progressive era having computer knowledge practically is too much necessary. But there are many persons who fear to perform on computer; this is known as computer phobia. There is no consensus in the literature on the use of the terms such as computer anxiety, computer phobia and technophobia. In the studies performed so far this subject has been handled under some titles, computer phobia, techno stress, cyber phobia, computer aversion, technophobia, and computer anxiety. Although technophobia is becoming a commonly used term, appearing in newspapers and popular magazines with increasing frequency, in a pioneering work, defined computer phobia as: (a) a resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about computers. Afterwards, technophobia has come to be known as computer phobia, and has been defined as: "(a) anxiety about present or future interactions with computers or computer related technology, (b) negative global attitudes about computers, and their operation or their societal impact; and/or, (c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction." Computer phobia is an intense fear of something that possesses little of no danger. While people with computer phobia realize that these fears are irrational, they often find that facing or even thinking about facing the fear situation brings on a panic attack. One of the root causes of computer phobia is the rapidity of technological advance. In the present technological society, the impression is that artifacts such as computers are more valued than people. Thus, computer phobia is a particularly striking example of the effects of the rapid growth of a technological society.

Cantrell & Wong (1999) defined computer anxiety, which has often been linked computer phobia, refers to negative feelings associated with the use of computers.

Jay (1981) defined computer phobia as the negative attitude toward computers that results from computer anxiety.

Rosen and Weil (1992) further defined computer phobia as anxiety and a negative attitude toward present and future interactions with computers.

STATEMENT OF THE PROBLEM

The problem selected for research may be defined as under.

"A STUDY OF COMPUTER PHOBIA AMONG SCHOOL TEACHERS TEACHING IN SENIOR SECONDARY SCHOOLS IN RELATION TO THEIR GENDER"

OBJECTIVES OF THE STUDY

The study was conducted to achieve the following objectives.

1. To study gender-wise difference in computer phobia among school teachers teaching in senior secondary schools with respect to:

i.Personal Failure

ii.Human Vs. Machine Ambiguity

iii.Convenience

HYPOTHESES OF THE STUDY

In the present study following hypotheses were formulated.

1. There will be no significant gender-wise difference in computer phobia among school teachers teaching in senior secondary schools with respect to:

i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

DELIMITATIONS OF THE STUDY

The present study was delimited to the following aspects.

- The sample included only school teachers teaching in senior secondary schools of Mandi and Kullu Disttt. of Himachal Pradesh.
- The study was confined to a sample of 400 teachers.
- The study was restricted to two variables i.e. computer phobia as dependent variable and gender, independent variables.

OPERATIONAL DEFINITIONS OF TERMS USED

Following terms have been used in the study.

1. Computer Phobia: Computer phobia is a fear or dislike of advanced technology. It invokes a wide range of negative emotions, such as anxiety,

incompetence, fear, stress and nervousness. It not only creates psychological imbalances but shifts human nature from reality. In the present study the level of computer phobia among teachers was assessed by 'Computer Phobia Scale' developed and standardized by Dr. S. Rajasekar and Dr. P. Vaiyapuri.

2. Senior Secondary School Teachers: It refers to the teachers teaching in government senior secondary schools of Distt. Kullu and Mandi of Himachal Pradesh.

3. Gender: Male and female teachers teaching in govt. and private senior secondary school.

RESEARCH METHOD USED

In order to accomplish the objective of the present study, the descriptive survey method was considered appropriately for gathering data computer phobia among secondary school teachers. Descriptive survey method is designed to obtain pertinent and precise information concerning the current status of phenomena and whenever possible to draw valid general conclusion from the facts discovered. Descriptive research involves events that present condition. It aims to describe "what exists" with respect to variables or conditions or conditions in a situation.

SAMPLING

Some populations are so large that their study would be expansive in terms of time, money, efforts and manpower. Sampling is one of the most important and indispensable factor of every research study. Sampling is a process by which relatively small number of individuals, objects or events is selected and analyzed in order to find out something about the target population from which the representative sample was selected. Sampling has been increasingly used in educational research for answering certain questions about a specific population. The sample drawn out of population should be true representative of the population otherwise; the results of the study may turn to be futile. The representative proportion of the population is called a sample.

In the present investigation, a representative sample of 400 school teachers teaching in senior secondary schools was selected from district Mandi and Kullu of Himachal Pradesh by using convenient sampling technique.

TOOL USED

In the present study Computer Phobia Scale constructed and standardized by Dr. Rajasekar and Dr. Vaiyapuri Raja was used by the researcher.

DATA ANALYSIS

Statistics is a mathematical technique or process of gathering, describing, organizing, analysis and interpreting numerical data. The statistical techniques are used to give meaningful and consider picture of the whole data so that it could be easily comprehended. It is employed to test the hypotheses in the study. In order to study the distribution of computer phobia scores of secondary school teachers, descriptive statistics like mean, median, mode, S.D. ,Q.D., skewness and kurtosis was used. For studying the gender-wise, significance of the difference in the computer phobia among school teachers teaching in senior secondary schools, t-test was used.

5.2 CONCLUSIONS

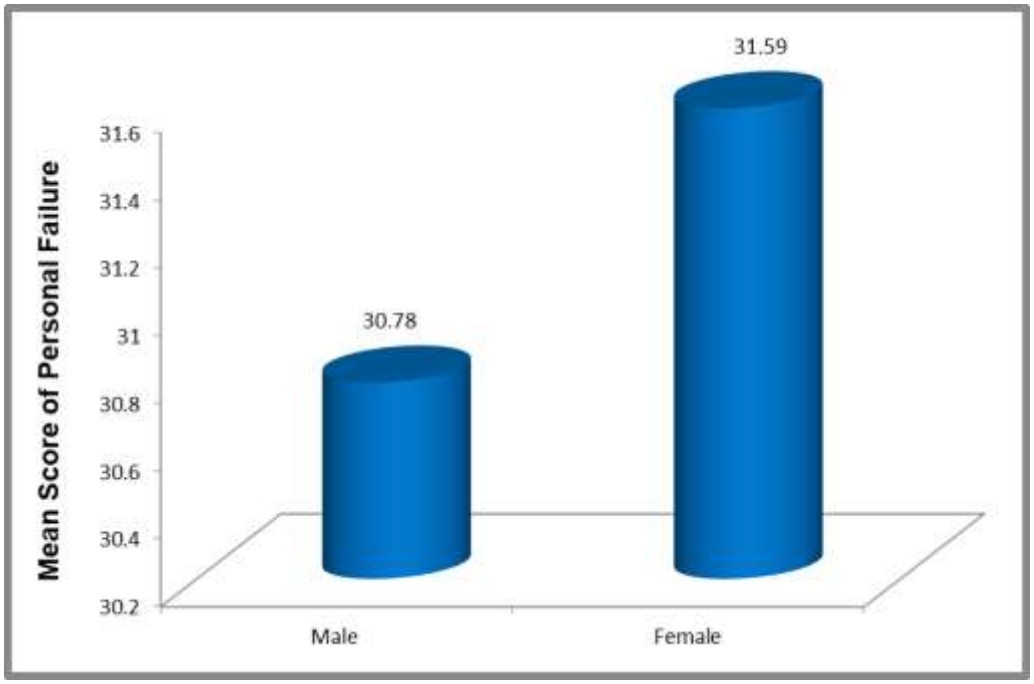
From the analysis and interpretation of the data, following conclusions may be drawn.

't' Value Showing Significance of Difference in Mean Scores of 'Components of Computer Phobia' and 'Overall Computer Phobia' of Senior Secondary School Teachers in relation to their Gender

Sr. No.	Dimension	Male	Female	d_f	SE_D	t-value
1.	Personal failure	N= 185	N= 190	373	0.754	1.075^{NS}
		Mean=30.78	Mean=31.59			
		SD=7.089	SD=7.501			
2.	Human Vs. Machine Ambiguity	N= 185	N= 190	373	0.470	0.64^{NS}
		Mean= 20.45	Mean=20.48			
		SD= 4.440	SD= 4.664			
3.	Convenience	N= 185	N= 190	373	0.515	1.046^{NS}
		M= 23.72	M=24.26			
		SD=4.990	SD=4.981			
4.	Overall Computer Phobia	N= 185	N= 190	373	1.432	0.942^{NS}

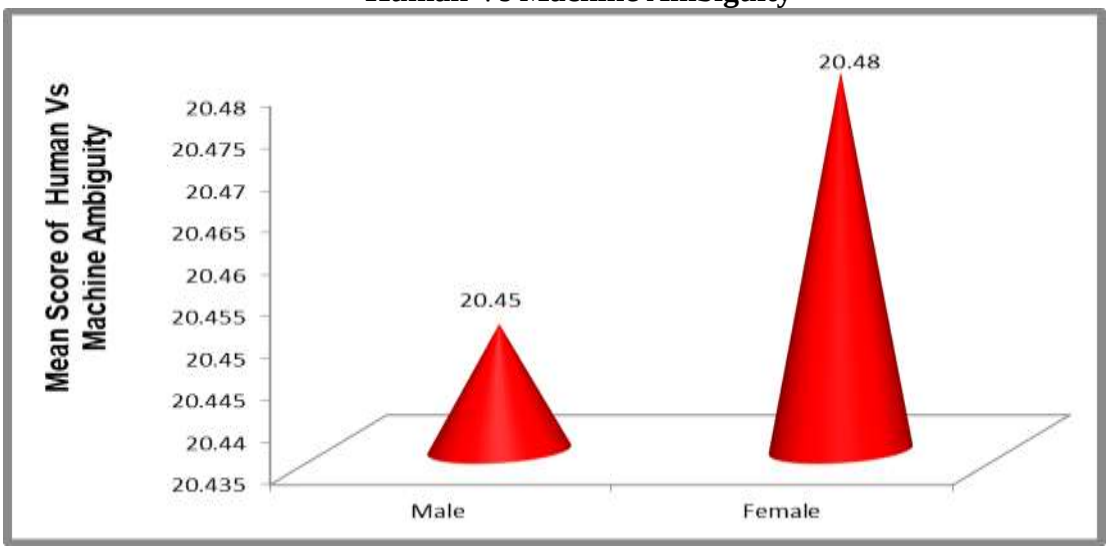
- Male and female senior secondary school teachers do not differ significantly with respect to their personal failure.

Gender-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure



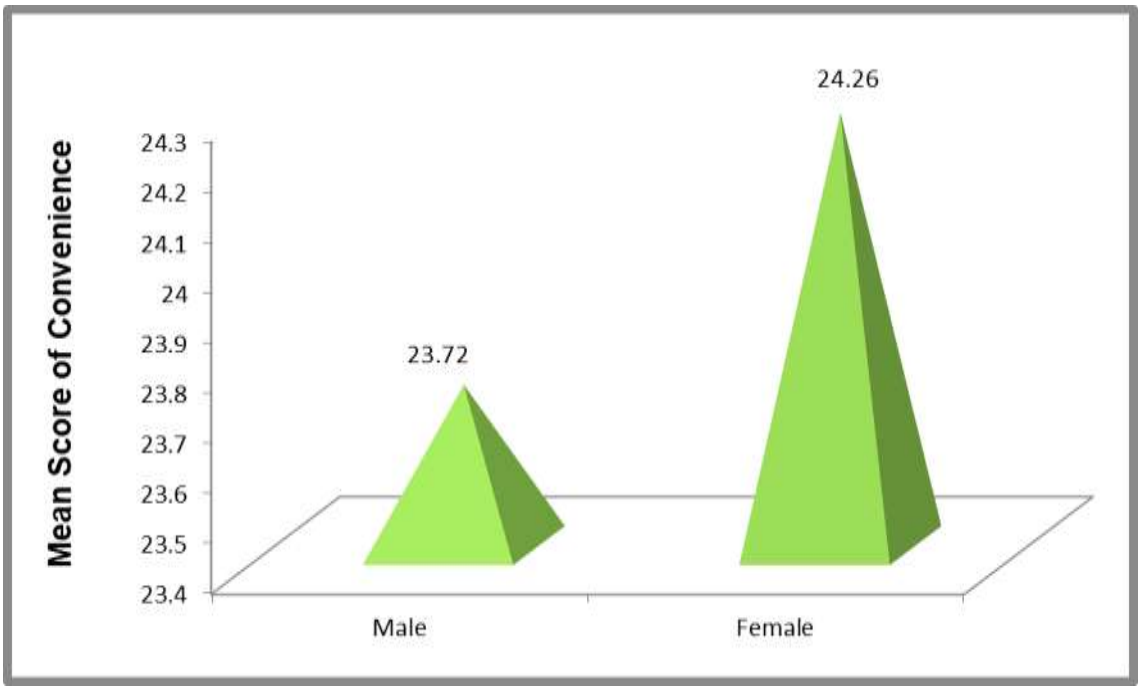
- Male and female senior secondary school teachers do not differ significantly with respect to human vs machine ambiguity.

Gender-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



- Male and female senior secondary school teachers do not differ significantly with respect to their convenience.

Gender-wise Difference among Senior Secondary School Teachers in Terms of Convenience



EDUCATIONAL IMPLICATIONS

The results of the present study have following implications for education:

- Results of the present study revealed that male teachers teaching in senior secondary schools have higher mean scores of Personal Failure component of computer phobia than their female counterparts. It means that female teachers have higher Personal Failure computer phobia than male teachers. But the difference between the two groups is not statistically significant. Government should appoint computer trained teachers or the teacher, who have practical knowledge of computer. Having seen the importance and necessity of computer in present era, the computer practical and theoretic paper should to be compulsory for all professional course, whether management, B.Ed. or others as medical, technology etc. For removing the anxiety about present or future interactions with computers or computer related technology female teachers have to devote some time for working with computers daily.
- Positive global attitude should be there about computers, their operations, or their societal impact.

- Educationists should make female teachers clear about the importance of computer in life. They should remove the fear of computer from teachers' mind and make them understand that it is not too hard to work on it. They should give teachers in there practical work of computer and if they see that there are some computer phobic than they should take their extra class of computer's practical and give them appropriate guidance to remove their fear of computer.
- Teacher trainees are suggested to take computer knowledge as an essential part of their study. Only theoretic knowledge is not sufficient for it, they should know practical knowledge of computer also.
- Teachers should be motivated to get training in the use of IT. It can be done with the help of various types of workshops, seminars, orientations programs and refresher courses for teachers which will develop in them positive and favourable attitude towards information technology and computer.
- Individual training should be given through chat base online or web-based therapy which can develop in teachers a positive attitude towards web self-efficacy, perceive web enjoyment, and behavioral intention to use the web in order to remove the phobia.
- Teachers need to be prompted to make use of internet for updating their knowledge and general awareness.

SUGGESSIONS FOR FURTHER STUDY

A few suggestions for further research having put forward as under

- In this study only one district has been selected, it can be done on state level, national level and international level.
- This study has been done only on the teachers while it can be carried out on other employees also.
- This study may be conducted on post graduate teachers. Similar study can be conducted on teachers at other levels of education with the help of questionnaire according to their level.
- The study may be conducted by taking sample from other districts of the state.
- A comparative study of computer phobia among tribal and non-tribal school teachers may be done.

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- A study can be undertaken to find out the effect of psychological factors on attitude of teachers towards computer and information technology.

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A STUDY OF COMPUTER PHOBIA AMONG SCHOOL TEACHERS TEACHING IN SENIOR SECONDARY SCHOOLS IN RELATION TO THEIR MARITAL STATUS

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Abstract

The computer phobia of senior secondary school teacher teaching in senior secondary school in Himachal Pradesh research was conducted by the researcher. The sample was collected from teachers teaching in senior secondary schools of Mandi and Kullu Disttt. of Himachal Pradesh. The study was confined to a sample of 400 teachers. The study was restricted to two variables i.e. computer phobia as dependent variable and marital status is independent variables. In the present study Computer Phobia Scale constructed and standardized by Dr. Rajasekar and Dr. Vaiyapuri Raja was used by the researcher. Statistics is a mathematical technique or process of gathering, describing, organizing, analysis and interpreting numerical data. The statistical techniques are used to give meaningful and consider picture of the whole data so that it could be easily comprehended. It is employed to test the hypotheses in the study. In order to study the distribution of computer phobia scores of secondary school teachers, descriptive statistics like mean, median, mode, S.D. ,Q.D., skewness and kurtosis was used. For studying the marital status-wise, significance of the difference in the computer phobia among school teachers teaching in senior secondary schools, t-test was used and the investigator find

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that there was no significant difference in the mean scores of overall computer phobia of married and unmarried school teachers teaching in senior secondary schools.

Introduction: Computer has revolutionized the education field. In the present progressive era having computer knowledge practically is too much necessary. But there are many persons who fear to perform on computer; this is known as computer phobia. There is no consensus in the literature on the use of the terms such as computer anxiety, computer phobia and technophobia. In the studies performed so far this subject has been handled under some titles, computer phobia, techno stress, cyberphobia, computer aversion, technophobia, and computer anxiety. Although technophobia is becoming a commonly used term, appearing in newspapers and popular magazines with increasing frequency, in a pioneering work, defined computer phobia as: (a) a resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about computers. Afterwards, technophobia has come to be known as computer phobia, and has been defined as: "(a) anxiety about present or future interactions with computers or computer related technology, (b) negative global attitudes about computers, and their operation or their societal impact; and/or, (c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction."

Computer phobia is an intense fear of something that possesses little of no danger. While people with computer phobia realize that these fears are irrational, they often find that facing or even thinking about facing the fear situation brings on a panic attack. One of the root causes of computer phobia is the rapidity of technological advance. In the present technological society, the impression is that artifacts such as computers are more valued than people. Thus, computer phobia is a particularly striking example of the effects of the rapid growth of a technological society.

Abd-Hamid, Yong, Chua, (2003) examined Computer phobia among students in three streams. Descriptive survey method was used in this study. A sample of Malaysian undergraduate students was selected. After the analysis of data it was found that science students have the lowest level of computer phobia, followed by social science and then arts students.

Alaba and Biodun (2003) conducted a study to investigate the extent to which computer efficacy, computer use and Computer Phobia could predict the level of student's 57 academic

performance in computer graphics course. The study adopted the descriptive research design. A total of 189 undergraduates of Olabisi Onabanjo University, Nigeria, served as sample for the study. The results of this indicate that computer use and efficacy significantly play role in reducing phobia towards accomplishing given academic tasks via the computer.

Yadav, Reena (2004); In her paper titled Attitude of Secondary School Teachers Towards The Use of Information Communication Technology In Education determined the attitude of educators from secondary school for implementation of ICT in educational sector. The study's main intents were to investigate the attitudes of female and male teachers, educators from schools belonging to urban and rural localities, educators from various sectors namely government and public toward ICT usage in educational sector. In the study, the researcher employed the descriptive survey method of research. Purposive random sampling was utilised, and the sample was drawn in phases. In the first stage, 200 educators from secondary level school were chosen based on gender (80 males and 120 females), area (100 rural and 100 urban), organisation (100 private and 100 government), followed by age (95 above 40 and 105 below 40). In the study, an ICT Attitude Scale (self-developed) was employed as a tool. According to the conclusions of her study, female instructors had more pragmatic perspective towards ICT usage than male teachers. Teachers at private schools had more pragmatic perspective towards ICT usage in educational sector than teachers in public 31 schools. Teachers under the age of 40 have a more positive attitude toward the use of ICT in education than teachers over the age of 40 in secondary school. Mona, Samriti; The study's goal is to discover secondary school teachers' aversion to computer use. a sample of 30 teachers was collected from secondary schools using a simple random technique total 10 schools out of which 30 teachers took part in the survey including 15 males and 15 female teachers between the age group of 25 to 50 years sample consists of inservice teachers of government schools the researcher used computer phobia scale 2010 by Dr. S Rajasekar and Dr.P.vaiyapuri. She observed that majority of educators have a moderately low level of computer phobia. Only 22% of the sample thinks that they encounter no issues comprehending the technicalities related to computers, and 39% agree that they favourably accomplish various computer aided work daily. The majority of teachers are enthusiastic about using computers for personal purposes. More over 60% of teachers stated that they not only enjoy working with computers, but that they also feel confident doing so. Some factors where teachers received negative scores lead to the conclusion that many teachers are

sceptical of the use of computers in educational practise. Furthermore, it was discovered that teaching experience and gender are substantially connected with instructors' beliefs and perceptions of computer use.

Rajasekar and Sini (2005) studied 'Internet Knowledge of Research Scholars.' The objectives of the study were to find out the internet knowledge of research scholars of various subjects in Kerala University and to assess the differences across different categories of scholars based on their residence, gender, and faculty. The investigator has used normative survey method in the study. The investigator constructed and validated an internet knowledge test. It consisted of 30 multiple choice questions needed 30 minutes for answering. Mean and standard deviation of the internet knowledge scores of the entire sample and sub-sample were computed and the results indicated that the internet knowledge of entire sample was relatively high (mean=16.25). The male research scholars had relatively high internet knowledge than the female research scholars. The internet knowledge of research scholar belonging to science subjects was relatively high (mean=18.74). The investigator found that there no significance difference between urban and rural research scholars of various subjects of science subjects.

STATEMENT OF THE PROBLEM: The problem selected for research may be defined as under.

"A STUDY OF COMPUTER PHOBIA AMONG SCHOOL TEACHERS TEACHING IN SENIOR SECONDARY SCHOOLS IN RELATION TO THEIR MARRITAL STATUS"

OBJECTIVES OF THE STUDY: The study was conducted to achieve the following objectives.

1. To study marital status-wise difference in computer phobia among school teachers teaching in senior secondary schools with respect to:

   i. Personal Failure
   ii. Human Vs. Machine Ambiguity
   iii. Convenience

HYPOTHESES OF THE STUDY

In the present study following hypotheses were formulated.

1. There will be no significant marital status-wise difference in computer phobia among school teachers teaching in senior secondary schools with respect to:

   i. Personal Failure

ii. Human Vs. Machine Ambiguity

iii. Convenience

DELIMITATIONS OF THE STUDY

The present study was delimited to the following aspects.

- The sample included only schoolteachers teaching in senior secondary schools of Mandi and Kullu Disttt. of Himachal Pradesh.
- The study was confined to a sample of 400 teachers.
- The study was restricted to two variables i.e., computer phobia as dependent variable and marital status-wise, independent variables.

OPERATIONAL DEFINITIONS OF TERMS USED

Following terms have been used in the study.

1. Computer Phobia: Computer phobia is a fear or dislike of advanced technology. It invokes a wide range of negative emotions, such as anxiety, incompetence, fear, stress and nervousness. It not only creates psychological imbalances but shifts human nature from reality. In the present study the level of computer phobia among teachers was assessed by 'Computer Phobia Scale' developed and standardized by Dr. S. Rajasekar and Dr. P. Vaiyapuri.

2. Senior Secondary School Teachers: It refers to the teachers teaching in government senior secondary schools of Distt. Kullu and Mandi of Himachal Pradesh.

3. Marital Status: married and unmarried teachers teaching in senior secondary schools

RESEARCH METHOD USED

In order to accomplish the objective of the present study, the descriptive survey method was considered appropriate for gathering data computer phobia among secondary school teachers. Descriptive survey method is designed to obtain pertinent and precise information concerning the status of phenomena and whenever possible to draw valid general conclusions from the facts discovered. Descriptive research involves events that present conditions. It aims to describe "what exists" with respect to variables or conditions or conditions in a situation.

SAMPLING: Some populations are so large that their study would be expansive in terms of time, money, efforts, and manpower. Sampling is one of the most important and indispensable factors of every research study. Sampling is a process by which a relatively small number of individuals, objects or events are selected and analyzed in order to find out something about the target population from which the representative sample was selected. Sampling has been

increasingly used in educational research for answering certain questions about a specific population. The sample drawn out of population should be true representative of the population otherwise; the results of the study may turn to be futile. The representative proportion of the population is called a sample.

In the present investigation, a representative sample of 400 school teachers teaching in senior secondary schools was selected from district Mandi and Kullu of Himachal Pradesh by using convenient sampling technique.

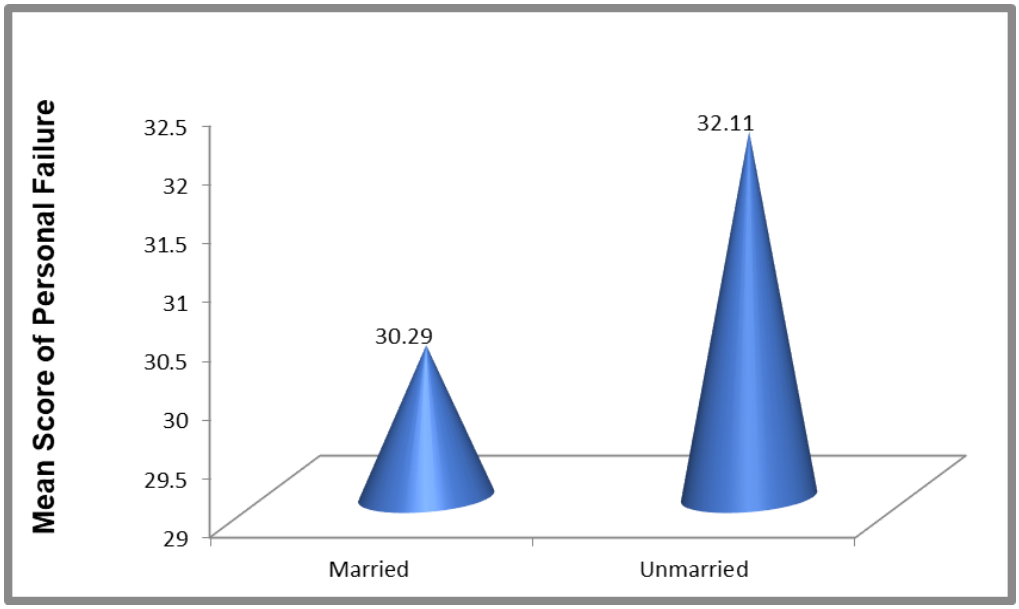
TOOL USED: In the present study Computer Phobia Scale constructed and standardized by Dr. Rajasekar and Dr. Vaiyapuri Raja was used by the researcher.

DATA ANALYSIS: Statistics is a mathematical technique or process of gathering, describing, organizing, analysis and interpreting numerical data. The statistical techniques are used to give meaningful and consider picture of the whole data so that it could be easily comprehended. It is employed to test the hypotheses in the study. In order to study the distribution of computer phobia scores of secondary school teachers, descriptive statistics like mean, median, mode, S.D. ,Q.D., skewness and kurtosis was used. For studying the gender-wise, significance of the difference in the computer phobia among school teachers teaching in senior secondary schools, t-test was used.

CONCLUSIONS: From the analysis and interpretation of the data, following conclusions may be drawn.

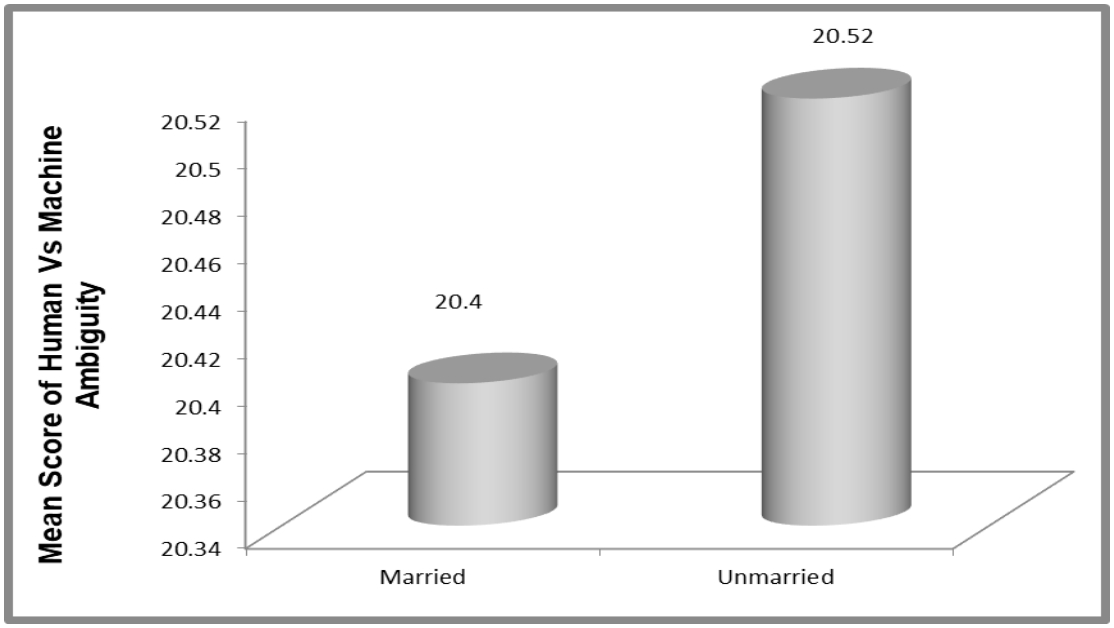
There is no significant marital status-wise difference in the mean scores of Personal Failure component of computer phobia among senior secondary school teachers.

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Personal Failure



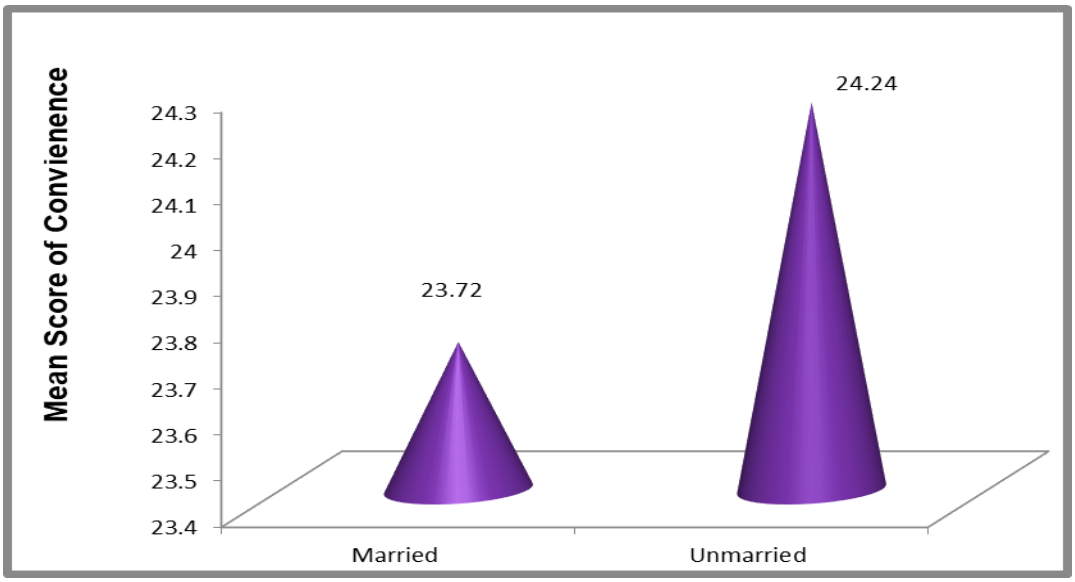
- There is no significant marital status-wise difference in the mean scores of Human Vs. Machine Ambiguity component of computer phobia among senior secondary school teachers.

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Human Vs Machine Ambiguity



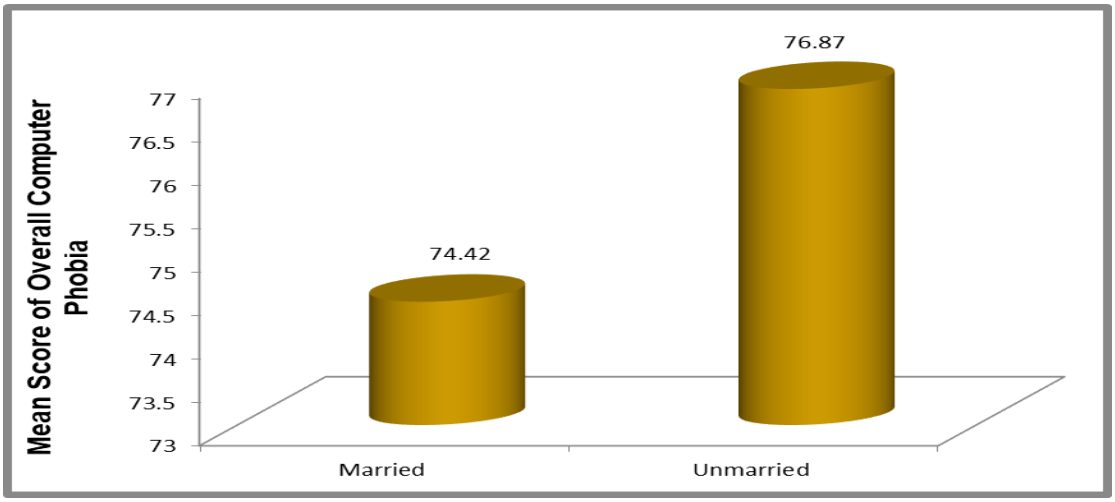
- There is no significant marital status-wise difference in the mean scores of Convenience component of computer phobia among senior secondary school teachers.

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Convenience



- There is no significant difference in the mean scores of overall computer phobia among married and unmarried senior secondary school teachers.

Marital Status-wise Difference among Senior Secondary School Teachers in Terms of Overall Computer Phobia



EDUCATIONAL IMPLICATIONS

The results of the present study have following implications for education:

- Teacher trainees are suggested to take computer knowledge as an essential part of their study. Only theoretic knowledge is not sufficient for it, they should know practical knowledge of computer also.
- Teachers should be motivated to get training in the use of IT. It can be done with the help of various types of workshops, seminars, orientations programs and refresher courses for teachers which will develop in them positive and favourable attitude towards information technology and computer.
- Individual training should be given through chat base online or web-based therapy which can develop in teachers a positive attitude towards web self-efficacy, perceive web enjoyment, and behavioral intention to use the web in order to remove the phobia.
- Teachers need to be prompted to make use of internet for updating their knowledge and general awareness.

SUGGESSIONS FOR FURTHER STUDY

A few suggestions for further research having put forward as under

- The study may be conducted by taking sample from other districts of the state.
- A comparative study of computer phobia among tribal and non-tribal school teachers may be done.
- A study can be undertaken to find out the effect of psychological factors on attitude of teachers towards computer and information technology.

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TWO DAYS NATIONAL CONFERENCE ON "VIRTUAL PLATFORM : A STEP TOWARDS ENHANCING LEARNING"

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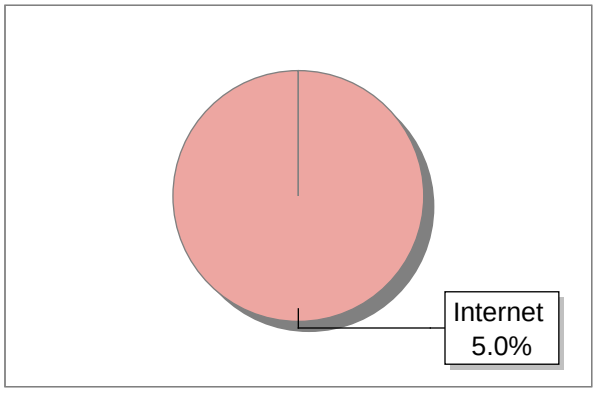

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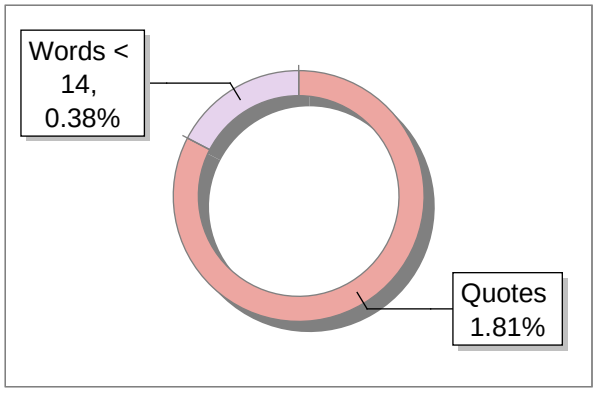

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